LAS VIRGENES - TRIUNFO
JOINT POWERS AUTHORITY
AGENDA

4232 Las Virgenes Road, Calabasas, CA 91302

CLOSING TIME FOR AGENDA IS 8:30 A.M. ON THE TUESDAY PRECEDING THE MEETING. GOVERNMENT CODE SECTION 54954.2 PROHIBITS TAKING ACTION ON ITEMS NOT ON POSTED AGENDA UNLESS AN EMERGENCY, AS DEFINED IN GOVERNMENT CODE SECTION 54956.5 EXISTS OR UNLESS OTHER REQUIREMENTS OF GOVERNMENT CODE SECTION 54954.2(B) ARE MET.

5:00 PM December 4, 2017

PLEDGE OF ALLEGIANCE

1 CALL TO ORDER AND ROLL CALL

2 APPROVAL OF AGENDA

3 PUBLIC COMMENTS

Members of the public may now address the Board of Directors **ON MATTERS NOT APPEARING ON THE AGENDA**, but within the jurisdiction of the Board. No action shall be taken on any matter not appearing on the agenda unless authorized by Subdivision (b) of Government Code Section 54954.2

4 CONSENT CALENDAR

A Minutes: Regular Meeting of November 6, 2017 (Pg. 4)

Approve.

5 ILLUSTRATIVE AND/OR VERBAL PRESENTATION AGENDA ITEMS

A Proclamation in Recognition of Upcoming Retirement: Carlos Reyes

B Pure Water Project Las Virgenes-Triunfo: Presentation by New Water Resources, Linda Macpherson

C Annual Financial Statements and Independent Auditor's Report (Pg. 11)

Receive and file the Fiscal Year 2016-17 JPA Financial Statements and Independent Auditor's Report.

6 ACTION ITEMS

A Tapia Process Air Improvements Project: Selection of Blowers and Diffusers (Pg. 49)

Approve the selection of Sulzer ABS process air blowers and OTT North America air diffusers based on a competitive process, and find that the selected equipment must

be designated by specific trade name in order to obtain necessary items that are each only available from one source for construction of the Tapia Process Air Improvements Project.

B Rancho Las Virgenes Composting Facility: Biofilter Maintenance (Pg. 81)

Authorize the Administering Agent/General Manager to issue a purchase order to Viramontes Express, in the amount of $84,204.80, for the supply of new biofilter media and the removal and disposal of the spent media.

C Tapia Water Reclamation Facility Fiscal Year 2017-18 Rehabilitation Project: Award of Design Contract (Pg. 82)

Accept the proposal from Cannon, and authorize the Administering Agent/General Manager to execute a professional services agreement, in the amount of $55,404, for engineering design and design support during construction for the Tapia Water Reclamation Facility Fiscal Year 2017-18 Rehabilitation Project.

D Tapia Primary Clarifier Sludge Collection System Drives: Award (Pg. 110)

Authorize the Administering Agent/General Manager to issue a purchase order to the Frost Company, in the amount of $67,146.00, for the purchase and installation of new drive units for the primary clarifiers at the Tapia Water Reclamation Facility.

E Rancho Las Virgenes Farm Sprayfields Operation and Maintenance: Renewal of Agreement (Pg. 112)

Authorize the Administering Agent/General Manager to execute a one-year agreement with W. Litten, Inc., in an amount not to exceed $250,000, for the operation and maintenance of the Rancho Las Virgenes Farm Sprayfields.

7 BOARD COMMENTS

8 ADMINISTERING AGENT/GENERAL MANAGER REPORT

9 FUTURE AGENDA ITEMS

10 INFORMATION ITEMS

A Carbon Tower Media Replacement: Authorization of Purchase Order (Pg. 128)

B Tapia and Headquarters Lighting Efficiency Upgrade Project: Award (Pg. 130)

11 PUBLIC COMMENTS

Members of the public may now address the Board of Directors **ON MATTERS NOT APPEARING ON THE AGENDA**, but within the jurisdiction of the Board. No action shall be taken on any matter not appearing on the agenda unless authorized by Subdivision (b) of Government Code Section 54954.2

12 CLOSED SESSION

A Conference with Legal Counsel - Potential Litigation (Government Code Section 54956.9): One Case

In the opinion of Legal Counsel, disclosure of the identity of the litigants would be prejudicial to the JPA.

13 ADJOURNMENT

Pursuant to Section 202 of the Americans with Disabilities Act of 1990 (42 U.S.C. Sec. 12132), and applicable federal rules and regulations, requests for a disability-related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting, should be made to the Executive Assistant/Clerk of the Board in advance of the meeting to ensure availability of the requested service or accommodation. Notices, agendas, and public documents related to the Board meetings can be made available in appropriate alternative format upon request.

LAS VIRGENES – TRIUNFO
JOINT POWERS AUTHORITY
MINUTES
REGULAR MEETING

5:00 PM November 6, 2017

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance to the Flag was led by Chair Wall.

1. CALL TO ORDER AND ROLL CALL

The meeting was called to order at **5:00 p.m.** by Chair Wall in the Board Room at Las Virgenes Municipal Water District headquarters at 4232 Las Virgenes Road in Calabasas, California. Josie Guzman, Clerk of the Board, conducted the roll call.

Present: Directors Caspary, Lewitt, Pan, Paule, Peterson, Polan, Renger, Tjulander, and Wall.
Absent: Director Orkney

2. APPROVAL OF AGENDA

Director Renger moved to approve the agenda. Motion seconded by Director Polan. Motion carried by the following vote:

AYES: Caspary, Lewitt, Pan, Paule, Peterson, Polan, Renger, Tjulander, Wall
NOES: None
ABSTAIN: None
ABSENT: Orkney

3. PUBLIC COMMENTS

None.

4. CONSENT CALENDAR

A Minutes: Regular Meeting of October 2, 2017: Approve

Director Paule moved to approve Item 4A. Motion seconded by Director Tjulander. Motion carried by the following vote:

AYES: Caspary, Lewitt, Pan, Paule, Peterson, Polan, Renger, Tjulander, Wall
NOES: None
ABSTAIN: None
ABSENT: Orkney

B Financial Review: First Quarter of Fiscal Year 2017-18

Receive and file the Financial Review for the First Quarter of Fiscal Year 2017-18.

Director Caspary moved to approve Item 4B. Motion seconded by Director Peterson. Motion carried by the following vote:

AYES: Caspary, Lewitt, Pan, Paule, Peterson, Polan, Renger, Tjulander, Wall
NOES: None
ABSTAIN: None
ABSENT: Orkney

C Water Information Management System Update: Authorize Purchase Order

Authorize the Administering Agent/General Manager to issue a purchase order to Hach Company, in the amount of $68,450, for the update of its Water Information Management System (WIMS) software.

Director Caspary moved to approve Item 4C. Motion seconded by Director Polan. Motion carried by the following vote:

AYES: Caspary, Lewitt, Pan, Paule, Peterson, Polan, Renger, Tjulander, Wall
NOES: None
ABSTAIN: None
ABSENT: Orkney

5. ILLUSTRATIVE AND/OR VERBAL PRESENTATION AGENDA ITEMS

A Pure Water Project Las Virgenes-Triunfo: Update

Public Outreach: Administering Agent/General Manager David Pedersen provided a presentation at the Conejo/Las Virgenes Future Foundation's 10X10 Event regarding potable water reuse, bringing water full circle, and the Pure Water Project Las Virgenes-Triunfo.

Director Caspary noted that he attended the 10X10 event, and he commended Mr. Pedersen on providing an outstanding presentation. He also noted that a map of the United States was displayed showing all of the pure water treatment plants that

are being proposed, and he suggested that perhaps the JPA could learn from projects that are much further along in terms of layout and design.

Director Paule also commended Mr. Pedersen on his presentation. He noted that the event was videotaped, and he stated that he would provide a copy of the videotaped portion of Mr. Pedersen's presentation for the website.

Demonstration Project: Linda Macpherson from New Water Resources will be invited to attend the next JPA Board meeting to discuss the Demonstration Project and to share her experience working with other agencies on similar projects.

6. ACTION ITEMS

A 2018 JPA Board Meeting Calendar

Review the 2018 JPA Board Meeting Calendar and make any scheduling adjustments.

Administering Agent/General Manager David Pedersen presented the report.

The Board made two adjustments to the 2018 JPA Board Meeting calendar: the January meeting would be held on January 10, 2018, and the September meeting would be held on September 5, 2018.

B Tapia Water Reclamation Facility Chloride Study: Award of Contract

Budget and appropriate $100,000; accept the proposal from Larry Walker Associates, Inc.; and authorize the Administering Agent/General Manager to execute a professional services agreement, in the amount of $91,850, for the Tapia Water Reclamation Facility Chloride Study.

Administering Agent/General Manager David Pedersen presented the report.

A discussion ensued regarding addressing chloride impacts associated with residential water softeners. Administering Agent/General Manager David Pedersen stated that staff would discuss these concerns with the consultant for inclusion in the study.

Director Pan suggested the JPA consider constructing additional recycled water storage facilities instead of discharging Tapia's effluent to the Los Angeles River.

Director Paule moved to approve Item 6B. Motion seconded by Director Peterson. Motion carried by the following vote:

AYES: Caspary, Lewitt, Pan, Paule, Peterson, Polan, Renger, Tjulander, Wall
NOES: None

ABSTAIN: None
ABSENT: Orkney

C Tapia Water Reclamation Facility Summer Season Waste Load Allocation Compliance Study: Award of Contract

Accept the proposal from Stantec Consulting Services, Inc.; and authorize the Administering Agent/General Manager to execute a professional services agreement in the amount of $149,515, for the Tapia Water Reclamation Facility Summer Season Waste Load Allocation Compliance Study.

Administering Agent/General Manager David Pedersen presented the report.

Director Peterson moved to approve Item 6C. Motion seconded by Director Lewitt.

Administering Agent/General Manager David Pedersen responded to a question regarding a comparison and analysis of the three treatment alternatives by stating Stantec had previously prepared a Technical Memorandum to evaluate the alternatives as part of the negotiations with the Los Angeles Regional Water Quality Control Board for the summer discharge requirements.

Motion carried by the following vote:

AYES: Caspary, Lewitt, Pan, Paule, Peterson, Renger, Tjulander, Wall
NOES: None
ABSTAIN: Polan
ABSENT: Orkney

D Pure Water Project Las Virgenes-Triunfo: Award of Contract for Title XVI Feasibility Study Preparation

Accept the proposal from Kennedy/Jenks Consultants and authorize the Administering Agent/General Manager to execute a professional services agreement, in the amount of $140,370 for preparation of a Title XVI Feasibility Study for the Pure Water Project Las Virgenes-Triunfo.

Administering Agent/General Manager David Pedersen presented the report.

Dawn Taffler, representing Kennedy/Jenks Consultants, responded to a question regarding whether single audits would be required for the U.S. Bureau of Reclamation grant by clarifying that a single audit would be performed if required by the grant agreement.

Director Paule noted a correction to the diagram in Kennedy/Jenks Consultants' proposal which should reference that customers from both partners of the JPA

would be beneficiaries of recycled water from the Westlake Filtration Plant. Administering Agent/General Manager David Pedersen responded that a correction would be made.

Director Peterson moved to approve Item 6D. Motion seconded by Director Caspary. Motion carried by the following vote:

AYES: Caspary, Lewitt, Pan, Paule, Peterson, Polan, Renger, Tjulander, Wall
NOES: None
ABSTAIN: None
ABSENT: Orkney

E State and Federal Legislative and Regulatory Advocacy: Contract Renewal

Authorize the Administering Agent/General Manager to execute a one-year renewal of the professional services agreement with Best Best & Krieger LLP, in the amount of $130,000, for state and federal legislative and regulatory advocacy services.

Administering Agent/General Manager David Pedersen presented the report.

A discussion ensued regarding the budget for this item and the effectiveness of Best Best & Krieger's assistance in securing grant funding and legislative advocacy services for the JPA.

Director Lewitt moved to approve Item 6E. Motion seconded by Director Pan. Motion carried by the following vote:

AYES: Caspary, Lewitt, Pan, Paule, Peterson, Polan, Renger, Tjulander, Wall
NOES: None
ABSTAIN: None
ABSENT: Orkney

7. BOARD COMMENTS

None.

8. ADMINISTERING AGENT/GENERAL MANAGER REPORT

Administering Agent/General Manager David Pedersen reported that flow augmentation to Malibu Creek was continuing, as well as intermittent use of the spray fields as a result of decreased recycled water use due to cool weather. He noted that the creek discharge prohibition period would continue through November 15th.

9. FUTURE AGENDA ITEMS

None.

10. PUBLIC COMMENTS

None.

11. CLOSED SESSION

A Conference with Legal Counsel – Potential Litigation (Government Code Section 54956.9): One Case

In the opinion of Legal Counsel, disclosure of the identity of the litigants would be prejudicial to the JPA.

The Board recessed to Closed Session at **5:38 p.m.,** and reconvened to Open Session at **5:56 p.m.**

Authority Counsel Keith Lemieux announced there was no reportable action taken during the Closed Session.

12. ADJOURNMENT

Seeing no further business to come before the Board, the meeting was duly adjourned at **5:56 p.m**.

James Wall, Chair

ATTEST:

Glen Peterson, Vice Chair

December 4, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Finance & Administration

Subject : Annual Financial Statements and Independent Auditor's Report

SUMMARY:

The Pun Group, LLP completed the annual audit of the Las Virgenes-Triunfo Joint Powers Authority (JPA) financial statements and issued an opinion that they fairly present the financial position of the JPA as of June 30, 2017.

RECOMMENDATION(S):

Receive and file the Fiscal Year 2016-17 JPA Financial Statements and Independent Auditor's Report.

FISCAL IMPACT:

No

ITEM BUDGETED:

No

DISCUSSION:

The JPA's net position decreased by $1.8 million, or 1.9%, during Fiscal Year 2016-17, compared to a decrease of $3.8 million, or 3.8%, during Fiscal Year 2015-16. For Fiscal Year 2016-17, expenditures increased by 6.0%, or $0.8 million, and billings to participants increased by 8.7%. The increase in expenditures was due to increased direct and allocated labor costs, including pension expenses.

The decrease in net position was largely due to depreciation of capital assets, which was partially offset by participant capital contributions and recycled water sales.
The following table provides highlights from the JPA's financial statements.

Condensed Statements of Revenues, Expenses and Changes in Net Position (in thousands of dollars)

	FY 2017	FY 2016	FY 2015
Recycled Water Sales	$2,058	$2,287	$2,135
Other Operating Revenue	110	70	226
Total Operating Revenue	**2,168**	**2,357**	**2,361**
Depreciation Expense	5,629	6,492	6,318
Other Operating Expense	14,755	13,919	15,190
Total Operating Expense	**20,384**	**20,411**	**21,508**
Loss before Billings	**(18,216)**	**(18,054)**	**(19,147)**
Billings to Participants	12,542	11,540	12,929
Non-Operating Revenue	45	22	13
Non-Operating Expense	(554)	(44)	(167)
Net Loss before Capital Contributions	**(6,183)**	**(6,536)**	**(6,372)**
Participant Capital Contributions	4,433	2,814	3,657
NET POSITION:			
Net Position - Beginning of Year	92,760	96,482	99,197
Change in Net Position	(1,750)	(3,722)	(2,715)
Net Position – End of Year	**$91,010**	**$92,760**	**$96,482**

A representative from The Pun Group, LLP will be available at the JPA Board meeting to answer questions.

Prepared by: Angela Saccareccia, Finance Manager

ATTACHMENTS:

Auditor's Letter
Audited Financial Statements

THE PUN GROUP
ACCOUNTANTS & ADVISORS

November 22, 2017

To the Board of Directors
of the Las Virgenes-Triunfo Joint Powers Authority
Calabasas, California

We have audited the financial statements of the business-type activities of the Las Virgenes-Triunfo Joint Powers Authority (the "JPA") for the years ended June 30, 2017 and 2016. Professional standards require that we provide you with information about our responsibilities under generally accepted auditing standards (and, if applicable, Government Auditing Standards and the Uniform Guidance), as well as certain information related to the planned scope and timing of our audit. We have communicated such information in our letter to you dated April 24, 2017. Professional standards also require that we communicate to you the following information related to our audit.

Significant Audit Findings

Qualitative Aspects of Accounting Practices

Management is responsible for the selection and use of appropriate accounting policies. The significant accounting policies used by the JPA are described in Note 2 to the basic financial statements.

New Accounting Standards

GASB Statement No. 77, *Tax Abatement Disclosures*: this Statement establishes financial reporting standards for tax abatement agreements entered into by state and local governments. Application of this statement is effective for the JPA's fiscal year ended June 30, 2017. This statement did not have a significant impact on the JPA's financial statements for the years ended June 30, 2017 and 2016.

GASB Statement No. 78, *Pensions Provided Through Certain Multiple-Employer Defined Benefit Pension Plans*: this Statement amends the scope and applicability of Statement 68 to exclude pensions provided to employees of state or local governmental employers through a cost-sharing multiple-employer defined benefit pension plan that (1) is not a state or local governmental pension plan, (2) is used to provide defined benefit pensions both to employees of state or local governmental employers and to employees of employers that are not state or local governmental employers, and (3) has no predominant state or local governmental employer (either individually or collectively with other state or local governmental employers that provide pensions through the pension plan). Application of this statement is effective for the JPA's fiscal year ended June 30, 2017. This statement did not have a significant impact on the JPA's financial statements for the years ended June 30, 2017 and 2016.

GASB Statement No. 80, *Blending Requirements for Certain Component Units – An Amendment of GASB Statement No. 14*: this Statement amends the blending requirements for the financial statement presentation of component units of all state and local governments. The additional criterion requires blending of a component unit incorporated as a not-for-profit corporation in which the primary government is the sole corporate member. Application of this statement is effective for the JPA's fiscal year ended June 30, 2017. This statement did not have a significant impact on the JPA's financial statements for the years ended June 30, 2017 and 2016.

GASB has issued Statement No. 82, *Pension Issues*. The objective of this Statement is to address certain issues that have been raised with respect to Statements No. 67, Financial Reporting for Pension Plans, No. 68, Accounting and Financial Reporting for Pensions, and No. 73, Accounting and Financial Reporting for Pensions and Related Assets That Are Not within the Scope of GASB Statement 68, and Amendments to Certain Provisions of GASB Statements 67 and 68. Specifically, this Statement addresses issues regarding (1) the presentation of payroll-related measures in required supplementary information, (2) the selection of assumptions and the treatment of deviations from the guidance in an Actuarial Standard of Practice for financial reporting purposes, and (3) the classification of payments made by employers to satisfy employee (plan member) contribution requirements. This statement became effective for periods beginning after June 15, 2016, and should be applied retroactively. This statement did not have a significant impact on the JPA's financial statements for the years ended June 30, 2017 and 2016.

No other new accounting policies were adopted and the application of existing policies was not changed during 2017. We noted no transactions entered into by the JPA during the year for which there is a lack of authoritative guidance or consensus. All significant transactions have been recognized in the financial statements in the proper period.

Accounting estimates are an integral part of the financial statements prepared by management and are based on management's knowledge and experience about past and current events and assumptions about future events. Certain accounting estimates are particularly sensitive because of their significance to the financial statements and because of the possibility that future events affecting them may differ significantly from those expected. The most sensitive estimates affecting the JPA's financial statements were:

- Management's estimate of the investment fair market value is based on information provided by the Union Bank, the trustee for the JPA's investments in U.S. Government Sponsored Agency Securities. We evaluated the key factors and assumptions used to develop the estimate of the investment fair market value in determining that it is reasonable in relation to the financial statements taken as a whole.

- Management's estimate for the allowance for doubtful accounts is based on the JPA's historical data with the collectability of its accounts receivable. We evaluated the key factors and assumptions used to develop the estimate for the allowance for doubtful accounts in determining that it is reasonable in relation to the financial statements taken as a whole.

- Management's estimate of the depreciable lives and estimated residual value of capital assets is based on the JPA's capital assets policy. We evaluated the key factors and assumptions used to develop the depreciation on capital assets in determining that it is reasonable in relation to the financial statements taken as a whole.

Certain financial statement disclosures are particularly sensitive because of their significance to financial statement users. The most sensitive disclosures affecting the financial statements were:

- Note 2 – Summary of Significant Accounting Policies
- Note 3 – Cash and Investments
- Note 6 – Participant Contributions
- Note 8 – Commitment and Contingencies

The financial statement disclosures are neutral, consistent, and clear.

Difficulties Encountered in Performing the Audit

We encountered no significant difficulties in dealing with management in performing and completing our audit.

Corrected and Uncorrected Misstatements

Professional standards require us to accumulate all known and likely misstatements identified during the audit, other than those that are clearly trivial, and communicate them to the appropriate level of management. Management has corrected all such misstatements. In addition, none of the misstatements detected as a result of audit procedures and corrected by management were material, either individually or in the aggregate, to each opinion unit's financial statements taken as a whole.

Disagreements with Management

For purposes of this letter, a disagreement with management is a financial accounting, reporting, or auditing matter, whether or not resolved to our satisfaction, that could be significant to the financial statements or the auditor's report. We are pleased to report that no such disagreements arose during the course of our audit.

Management Representations

We have requested certain representations from management that are included in the management representation letter dated November 20, 2017.

Management Consultations with Other Independent Accountants

In some cases, management may decide to consult with other accountants about auditing and accounting matters, similar to obtaining a "second opinion" on certain situations. If a consultation involves application of an accounting principle to the JPA's financial statements or a determination of the type of auditor's opinion that may be expressed on those statements, our professional standards require the consulting accountant to check with us to determine that the consultant has all the relevant facts. To our knowledge, there were no such consultations with other accountants.

Other Audit Findings or Issues

We generally discuss a variety of matters, including the application of accounting principles and auditing standards, with management each year prior to retention as the governmental unit's auditors. However, these discussions occurred in the normal course of our professional relationship and our responses were not a condition to our retention.

Other Matters

We applied certain limited procedures to the Management's Discussion & Analysis, which is Required Supplementary Information ("RSI") that supplements the basic financial statements. Our procedures consisted of inquiries of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We did not audit the RSI and do not express an opinion or provide any assurance on the RSI.

We were engaged to report on the Schedule of Changes in Participants' Advance Account, which accompany the financial statements but are not RSI. With respect to this supplementary information, we made certain inquiries of management and evaluated the form, content, and methods of preparing the information to determine that the information complies with accounting principles generally accepted in the United States of America, the method of preparing it has not changed from the prior period, and the information is appropriate and complete in relation to our audit of the financial statements. We compared and reconciled the supplementary information to the underlying accounting records used to prepare the financial statements or to the financial statements themselves.

Restriction on Use

This information is intended solely for the information and use of the Board of Directors and management of the Las Virgenes-Triunfo Joint Powers Authority and is not intended to be, and should not be, used by anyone other than these specified parties.

Very truly yours,

The Pun Group, LLP

Santa Ana, California

Kenneth H. Pun, CPA, CGMA
CPA Number: 88316

Las Virgenes – Triunfo Joint Powers Authority

Financial Statements and Independent Auditors' Reports

For the Years Ended June 30, 2017 and 2016

THE PUN GROUP
ACCOUNTANTS & ADVISORS

Las Virgenes-Triunfo Joint Powers Authority

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THE PUN GROUP
ACCOUNTANTS & ADVISORS

INDEPENDENT AUDITORS' REPORT

To the Board of Directors
of the Las Virgenes-Triunfo Joint Powers Authority
Calabasas, California

Report on the Financial Statements

We have audited the accompanying basic financial statements of the Las Virgenes-Triunfo Joint Powers Authority (the "JPA"), which comprise the statements of net position as of June 30, 2017 and 2016, and the related statements of revenues, expenses and changes in net position, and cash flows for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the JPA as of June 30, 2017 and 2016, and the respective changes in its financial position and cash flows thereof for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis on pages 5 to 9 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audits were conducted for the purpose of forming an opinion on the financial statements that collectively comprise the JPA's basic financial statements. The Schedule of Changes in Participants' Advance Accounts is presented for purposes of additional analysis and is not a required part of the basic financial statements.

The Schedule of Changes in Participants' Advance Accounts is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Schedule of Changes in Participants' Advance Accounts is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated November 22, 2017, on our consideration of the JPA's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the JPA's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the JPA's internal control over financial reporting and compliance.

The Pun Group, LLP

Santa Ana, California
November 22, 2017

Kenneth H. Pun, CPA, CGMA
CPA Number: 88316

THE PUN GROUP
ACCOUNTANTS & ADVISORS

REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

Independent Auditors' Report

To the Board of Directors
of the Las Virgenes-Triunfo Joint Powers Authority
Calabasas, California

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the basic financial statements of the Las Virgenes-Triunfo Joint Power Authority (the "JPA"), which comprise the statements of net position as of June 30, 2017 and 2016, and the related statements of revenues, expenses, and changes in net position and cash flows for the years then ended, and have issued our report thereon dated November 22, 2017.

Internal Control over Financial Reporting

In planning and performing our audits of the financial statements, we considered the JPA's internal control over financial reporting ("internal control") to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the JPA's internal control. Accordingly, we do not express an opinion on the effectiveness of the JPA's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the JPA's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards.*

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

The Pun Group, LLP

Santa Ana, California
November 22, 2017

Kenneth H. Pun, CPA, CGMA
CPA Number: 88316

MANAGEMENT'S DISCUSSION AND ANALYSIS

This section of the Joint Powers Authority (JPA) annual financial report presents our analysis of the JPA's financial performance during the Fiscal Years that ended on June 30, 2016 and June 30, 2017. Please read it in conjunction with the Financial Statements, which follow this section.

FINANCIAL HIGHLIGHTS

- The JPA's net position decreased by $1.8 million or 1.9% during FY 2017 and by $3.8 million or 3.9% during FY 2016.

- During FY17 the JPA's operating expenses, not including depreciation expense, increased $0.8 million, or up by 6.0% and during FY 2016 it decreased by $1.3 million or down by 8.4%.

- Billings to JPA participants increased to $12.5 million during FY 2017 or by 8.7% more than the prior fiscal year and it decreased to $11.5 million during FY 2016 or by 10.7% from prior fiscal year.

OVERVIEW OF THE FINANCIAL STATEMENTS

The discussion and analysis are intended to serve as an introduction to Las Virgenes – Triunfo Joint Powers Authority (JPA) financial statements. The JPA's basic financial statements comprise two components: Financial Statements and Notes to the Financial Statements. This report also contains other supplementary information in addition to the basic financial statements themselves.

BASIC FINANCIAL STATEMENTS

The Financial Statements of the JPA report information about the JPA using accounting methods similar to those used by private sector companies. These statements offer short- and long-term financial information about its activities. The Comparative Statements of Net Position (CSNP) includes all of the JPA's assets and liabilities and provides information about the nature and amount of investments in resources (assets) and the obligations to JPA creditors (liabilities). The CSNP also provides the basis for evaluating the capital structure of the JPA.

All of the current year's revenues and expenses are accounted for in the Comparative Statements of Revenues, Expenses and Changes in Net Position. These statements reflect the result of the JPA's operations over the past year.

The final Financial Statements are the Comparative Statements of Cash Flows. The primary purpose of this statement is to provide information about the JPA's cash receipts and cash payments during the reporting period. The statement reports cash receipts, cash payments, and net changes in cash resulting from operations and investments. It also provides answers to such questions as where did cash come from, what was cash used for, and what was the change in cash balance during the reporting period.

FINANCIAL ANALYSIS OF THE JOINT POWERS AUTHORITY

The financial statements provide information on whether the District, as a whole, is in a stronger or weaker financial position compared to the last year. The Statement of Net Position and the Statement of Revenues, Expenses, and Changes in Net Position provide a means to measure the District's financial health or financial position. Over time, increases or decreases in the District's net position are one indicator of whether its financial health is improving or deteriorating. However, you will need to consider other non-financial factors such as changes in economic conditions, population growth, zoning, and new or changed government legislation.

The JPA has seen a slight drought rebound but is still experiencing decreased sanitation flows and decreased sales of recycled water. In FY 2016-17 the JPA Board approved a Basis of Design Report for indirect potable reuse using Las Virgenes Reservoir, as the preferred approach to maximize the JPA's beneficial use of recycled water and minimize discharges to Malibu Creek, subsequently the effort was renamed Pure Water Project Las Virgenes – Triunfo. In FY 2017-18 the effort will continue with multiple studies, a potential acquisition of property, environmental reviews, design phases for a demonstration project, and continuing public outreach efforts.

NET POSITION

To begin our analysis, a summary of the JPA's Statement of Net Position is presented in Table 1.

TABLE 1
Condensed Statements of Net Position
(in thousands of dollars)

	FY 2017	FY 2016	FY 2015
Current Assets	$8,172	$6,463	$6,832
Capital Assets	91,010	92,760	96,482
Total Assets	**99,182**	**99,223**	**103,314**
Due to Participants	7,422	5,812	5,952
Other Liabilities	750	651	880
Total Liabilities	**8,172**	**6,463**	**6,832**
Total Net Position:	**$91,010**	**$92,760**	**$96,482**

As can be seen from the table above, net position of the JPA is equivalent to capital assets. Everything else is either a current asset or a liability. The decrease in Net Position (and capital assets) is due to depreciation expense exceeding participant capital contributions.

While the Statement of Net Position shows the change in financial position, the Statement of Revenues, Expenses and Changes in Net Position provides answers as to the nature and source of these changes.

TABLE 2
Condensed Statements of Revenues, Expenses and Changes in Net Position
(in thousands of dollars)

	FY 2017	FY 2016	FY 2015
Recycled Water Sales	$2,058	$2,287	$2,135
Other Operating Revenue	110	70	226
Total Operating Revenue	**2,168**	**2,357**	**2,361**
Depreciation Expense	5,629	6,492	6,318
Other Operating Expense	14,755	13,919	15,190
Total Operating Expense	**20,384**	**20,411**	**21,508**
Loss before Billings	**-18,216**	**-18,054**	**-19,147**
Billings to Participants	12,542	11,540	12,929
Non-Operating Revenue	45	22	13
Non-Operating Expense	-554	-44	-167
Net Loss before Capital Contributions	**-6,183**	**-6,536**	**-6,372**
Participant Capital Contributions	4,433	2,814	3,657
NET POSITION:			
Net Position - Beginning of Year	92,760	96,482	99,197
Change in Net Position	-1,750	-3,722	-2,715
Net Position – End of Year	**$91,010**	**$92,760**	**$96,482**

As reflected in Table 2, FY 2017 revenue from recycled water sales decreased compared to prior fiscal year due to a 9.4% reduction in recycled water purchases from Las Virgenes Municipal Water District, which was offset by an increase in FY 2016 of wholesale water rates. Recycled water sales to Triunfo Sanitation District were 2.5% lower in FY 2017 than prior fiscal year. Total Operating Expenses not including depreciation, increased 6.0% in FY 2017 from prior fiscal year due to increased direct and allocated labor costs, including pension expenses. Billings to Participants increased as a result of the decrease in revenues and increase in expenses in FY 2017 compared to prior fiscal year.

Revenue from recycled water sales increased slightly due to an increase in wholesale water rates in FY 2016 compared to prior fiscal year. Revenue in FY 2016 was suppressed by a 13% reduction in recycled water purchases from Las Virgenes Municipal Water District. Recycled water sales to Triunfo Sanitation District were flat year-over-year. Operating expenses decreased from FY 2016 to prior fiscal year due to decreased sanitation flow to the Tapia Water Reclamation Facility.

CAPITAL ASSETS AND DEBT ADMINISTRATION

At the end of FY 2017 and FY 2016, the JPA had net capital assets of $91.0 million and $92.8 million as shown in Table 3.

TABLE 3
Capital Assets
(in thousands of dollars)

	FY 2017	FY 2016	FY 2015
Land & Land Rights	12,259	12,259	12,259
Sewer & Treatment Plant	120,682	118,814	117,535
Compost Plant	71,196	70,972	63,275
Recycled Water System	34,013	33,349	31,845
Construction in Progress	3,040	2,217	10,250
Subtotal	**241,190**	**237,611**	**235,164**
Less Accumulated Depreciation	-150,180	-144,851	-138,682
Total Capital Assets	**91,010**	**92,760**	**96,482**

The following is a summary of some of the major improvements to the system during FY2017 and FY 2016.

TABLE 4
Major Capital Improvement Projects

	FY 2017
Centrate Equalization Tank	1,785
Tapia Primary Tank No.2-5 Rehabilitation	874
Tapia Gate & Drive Replacement	437
Recycled Water Storage Study	224
Facility Siting Study	177
Process Air Improvements	143
Rancho Las Virgenes Digester Cleaning and Repair	109
Tapia Water Reclamation Reliability Improvement	109
Total Major Projects	**$3,858**

	FY 2016
Tapia Channel Mixing Improvements	$1,105
Recycled Water Seasonal Storage Plan	526
Woodland Hills Golf Course Recycled Water Main Extension	378
Rancho Las Virgenes Compost Facility New Loader	163
Rancho Las Virgenes Digester Cleaning and Repair	162
Centrate Equalization Tank	145
Total Major Projects	**$2,479**

LONG TERM DEBT

The JPA currently has no long-term debt. All funding is provided by the participating agencies.

CONTACTING THE DISTRICT'S FINANCIAL MANAGER

This financial report is designed to provide our residents, customers and creditors with a general overview of the JPA's finances and to demonstrate the JPA's accountability for the money it receives. The responsibility for the JPA's accounting and financial reporting rests with the staff of the Las Virgenes Municipal Water District. If you have questions about this report or need additional financial information, contact the Las Virgenes Municipal Water District, Department of Finance and Administration, 4232 Las Virgenes Road, Calabasas, California, 91302.

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Las Virgenes-Triunfo Joint Powers Authority
Statements of Net Position
June 30, 2017 and 2016

	2017	2016
ASSETS		
Current assets:		
Cash and cash equivalent	$ 6,007,921	$ 4,352,680
Investments	976,730	1,000,650
Accounts receivable	955,388	889,662
Interest receivable	11,442	6,621
Inventories	177,904	175,108
Prepaid items	42,692	38,372
Total current assets	8,172,077	6,463,093
Noncurrent assets:		
Capital assets, not being depreciated	15,298,574	14,475,926
Capital assets, being depreciated, net	75,711,003	78,284,060
Total capital assets	91,009,577	92,759,986
Total noncurrent assets	91,009,577	92,759,986
Total assets	99,181,654	99,223,079
LIABILITIES		
Current liabilities:		
Accounts and contracts payable and accrued liabilities	749,697	651,396
Due to participants	7,422,380	5,811,697
Total current liabilities	8,172,077	6,463,093
Total liabilities	8,172,077	6,463,093
NET POSITION		
Investments in Capital Assets by Participants:		
Las Virgenes Municipal Water District	60,406,116	61,600,523
Triunfo Sanitation District	30,603,461	31,159,463
Investments in Capital Assets by Participants	91,009,577	92,759,986
Total net position	$ 91,009,577	$ 92,759,986

See accompanying Notes to the Basic Financial Statements.

Las Virgenes-Triunfo Joint Powers Authority
Statements of Revenues, Expenses, and Changes in Net Positon
For the Years Ended June 30, 2017 and 2016

	2017	2016
OPERATING REVENUES:		
Wholesale recycled water sales	$ 2,057,700	$ 2,286,663
Other income	110,537	69,678
Total operating revenues	2,168,237	2,356,341
OPERATING EXPENSES:		
Treatment plant	4,084,694	4,265,142
Recycled water transmission and distribution	1,296,104	1,113,484
Compost plant	2,452,065	2,352,036
Sewer	72,881	65,253
Depreciation	5,629,045	6,491,741
General and administrative	6,640,031	5,931,993
Other operating expenses	209,248	191,375
Total operating expenses	20,384,068	20,411,024
OPERATING (LOSS) BEFORE BILLINGS TO PARTICIPANTS	(18,215,831)	(18,054,683)
Billings to participants	12,541,776	11,540,379
OPERATING (LOSS)	(5,674,055)	(6,514,304)
NONOPERATING REVENUES (EXPENSES):		
Interest income	45,010	22,563
Other expenses	(528,443)	-
Loss on disposal of capital assets	(25,621)	(44,061)
Total nonoperating revenues (expenses)	(509,054)	(21,498)
NET (LOSS) BEFORE PARTICIPANTS' CAPITAL CONTRIBUTIONS	(6,183,109)	(6,535,802)
Participants' capital contributions	4,432,700	2,814,137
CHANGES IN NET POSITION	(1,750,409)	(3,721,665)
NET POSITION:		
Beginning of year	92,759,986	96,481,651
End of year	$ 91,009,577	$ 92,759,986

See accompanying Notes to the Basic Financial Statements.

Las Virgenes-Triunfo Joint Powers Authority
Statements of Cash Flows
For the Years Ended June 30, 2017 and 2016

	2017	2016
CASH FLOWS FROM OPERATING ACTIVITIES:		
Cash received from participants	$ 14,533,750	$ 13,787,981
Cash paid to suppliers for operations	(14,792,198)	(14,144,789)
Other revenue	110,537	69,678
Net cash (used in) operating activities	(147,911)	(287,130)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:		
Acquisition of capital assets	(4,304,341)	(2,814,135)
Capital contributions	4,432,700	2,814,137
Cash paid to participants	-	(140,423)
Cash received from participants	1,610,683	-
Net cash provided by (used in) capital and related financing activities	1,739,042	(140,421)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Interest received	60,985	13,032
Purchase of investments	(1,000,000)	(1,000,000)
Cash receipts from sale of investments	1,003,125	1,007,652
Net cash provided by investing activities	64,110	20,684
Net change in cash and cash equivalents	1,655,241	(406,867)
CASH AND CASH EQUIVALENTS:		
Beginning of year	4,352,680	4,759,547
End of year	$ 6,007,921	$ 4,352,680
NONCASH INVESTING ACTIVITIES		
Change in fair value of investments	$ (5,268)	$ 2,493
RECONCILIATION OF OPERATING (LOSS) TO NET CASH USED IN OPERATING ACTIVITIES		
Operating (loss)	$ (5,674,055)	$ (6,514,304)
Adjustments to reconcile operating loss to net cash (used in) operating activities:		
Depreciation	5,629,045	6,491,741
Other expenses	(528,443)	-
Write-off of comstruction in progress	400,084	-
Changes in operating assets and liabilities:		
(Increase) decrease in accounts receivable	(65,726)	(39,061)
(Increase) decrease in inventories	(2,796)	2,747
(Increase) decrease in prepaid items	(4,320)	759
Increase (decrease) in accounts and contracts payable and accrued liabilities	98,300	(229,012)
Net cash (used in) operating activities	$ (147,911)	$ (287,130)

See accompanying Notes to the Basic Financial Statements.

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Note 1 – Reporting Entity

On October 12, 1964, Las Virgenes Municipal Water District ("LVMWD") and Triunfo Sanitation District ("TSD") established Las-Virgenes-Triunfo Joint Powers Authority ("JPA") to construct, operate, maintain and provide for the replacement of a joint sewerage system to serve the Malibu Creek drainage area. The equity of each member is equal to the member's pro-rata share of capital assets, net of depreciation. LVMWD has been the designated administering agent.

Note 2 – Summary of Significant Accounting Policies

Basis of Presentation

Financial statement presentation follows the recommendations promulgated by the Governmental Accounting Standards Board ("GASB") commonly referred to as accounting principles generally accepted in the United States of America ("U.S. GAAP"). GASB is the accepted standard-setting body for establishing governmental accounting and financial reporting standards.

Measurement Focus, Basis of Accounting and Financial Statements Presentation

The Financial Statements (i.e., the statement of net position, the statement of revenues, expenses and changes in net position, and statement of cash flows) report information on all of the activities of the JPA.

The Financial Statements are reported using the *"economic resources"* measurement focus and the accrual basis of accounting. Revenues are recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows. Interest associated with the current fiscal period is considered to be susceptible to accrual and so has been recognized as revenue of the current fiscal period.

The Statement of Net Position reports separate sections for Deferred Outflows of Resources, and Deferred Inflows of Resources, when applicable.

Deferred Outflows of Resources represent outflows of resources (consumption of net position) that apply to future periods and that, therefore, will not be recognized as an expense until that time.

Deferred Inflows of Resources represent inflows of resources (acquisition of net position) that apply to future periods and that, therefore, are not recognized as revenue until that time.

Operating revenues are those revenues that are generated from the primary operations of the JPA. The JPA reports a measure of operations by presenting the change in net position from operations as "operating income" in the statement of revenues, expenses, and changes in net position. Operating activities are defined by the JPA as all activities other than financing and investing activities (interest expense and investment income), and other infrequently occurring transaction of a non-operating nature. Operating expenses are those expenses that are essential to the primary operations of the JPA. All other expenses are reported as non-operating expenses.

Note 2 – Summary of Significant Accounting Policies (Continued)

Cash, Cash Equivalents, and Investments

Cash and cash equivalents include all highly liquid investments with original maturities of 90 days or less and are carried at cost, which approximates fair value.

The JPA participates in an investment pool managed by the State of California titled Local Agency Investment Fund (LAIF), which has invested a portion of the pool funds in structured notes and asset-backed securities. LAIF's investments are subject to credit risk with the full faith and credit of the State of California collateralizing these investments. In addition, these structured notes and assets-backed securities are subject to market risk and to change in interest rates. The reported value of the pool is base on net asset value.

Certain disclosure requirements, if applicable for deposit and investment risk, are specified for the following areas:

- Interest Rate Risk
- Credit Risk
  - Overall
  - Custodial Credit Risk
  - Concentration of Credit Risk
- Foreign Currency Risk

Fair Value Measurements

In accordance with U.S. GAAP, investments, unless otherwise specified, recorded at fair value in the Statements of Net Position, are categorized based upon the level of judgment associated with the inputs used to measure their fair value. Levels of inputs are as follows:

Level 1 — Inputs are unadjusted, quoted prices for identical assets and liabilities in active markets at the measurement date.

Level 2 — Inputs, other than quoted prices included in Level 1, that are observable for the asset or liability through corroboration with market data at the measurement date.

Level 3 — Unobservable inputs that reflect management's best estimate of what market participants would use in pricing the asset or liability at the measurement date.

Accounts Receivable

Customer accounts receivable consist of amounts owed by private individuals and organizations for services rendered in the regular course of business operations. Receivables are shown net of allowances for doubtful accounts, if any. The JPA also accrues an estimated amount for services that have been provided, but not yet billed. Management has evaluated the accounts and believes they are all collectible.

Inventories

Inventories consist of expendable supplies and are valued at average cost method.

Note 2 – Summary of Significant Accounting Policies (Continued)

Prepaid items

Payments made to vendors for services that will benefit periods beyond the fiscal year ended are recorded as prepaid items.

Capital Assets

Capital assets are valued at historical cost, or estimated historical cost, if actual historical cost was not available. Donated capital assets are valued at acquisition value on the date donated. The JPA policy has set the capitalization threshold for reporting capital assets at $5,000, all of which must have an estimated useful life in excess of one year. Depreciation is recorded on a straight-line basis over estimated useful lives of the assets, which range from 3 to 100 years.

Plant	10 - 100 Years
Machinery and equipment	3 - 25 Years

Capital assets are shared in accordance with each participant's capacity rights reserved in each component of the joint system. The allocation of costs for projects in process is based upon engineering estimates of the capacity rights and could increase or decrease when the final capacity rights are determined.

Net Position

Net position represents the difference between all other elements in the statement of net position and should be displayed in the following three components:

Investment in Capital Assets – This component of net position consists of capital assets, net of accumulated depreciation.

Restricted – This component of net position consists of restricted assets reduced by liabilities and deferred inflows of resources related to those assets.

Unrestricted – This component of net position is the amount of the assets, deferred outflows of resources, liabilities, and deferred inflows of resources that are not included in the determination of net investment in capital assets or the restricted component of net position.

Use of Restricted/Unrestricted Net Position

When both restricted and unrestricted resources are available for use, it is the JPA's policy to use restricted resources first, then unrestricted resources as they are needed.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect certain reported amounts and disclosure. Accordingly, actual results could differ from those estimates.

Note 2 – Summary of Significant Accounting Policies (Continued)

Accounting Changes

GASB Statement No. 77, *Tax Abatement Disclosures*: this Statement establishes financial reporting standards for tax abatement agreements entered into by state and local governments. Application of this statement is effective for the JPA's fiscal year ended June 30, 2017. This statement did not have a significant impact on the JPA's financial statements for the years ended June 30, 2017 and 2016.

GASB Statement No. 78, *Pensions Provided Through Certain Multiple-Employer Defined Benefit Pension Plans*: this Statement amends the scope and applicability of Statement 68 to exclude pensions provided to employees of state or local governmental employers through a cost-sharing multiple-employer defined benefit pension plan that (1) is not a state or local governmental pension plan, (2) is used to provide defined benefit pensions both to employees of state or local governmental employers and to employees of employers that are not state or local governmental employers, and (3) has no predominant state or local governmental employer (either individually or collectively with other state or local governmental provide pensions through the pension plan). Application of this statement is effective for the JPA's fiscal year ended June 30, 2017. This statement did not have a significant impact on the JPA's financial statements for the years ended June 30, 2017 and 2016.

GASB Statement No. 80, *Blending Requirements for Certain Component Units – An Amendment of GASB Statement No. 14*: this Statement amends the blending requirements for the financial statement presentation of component units of all state and local governments. The additional criterion requires blending of a component unit incorporated as a not-for-profit corporation in which the primary government is the sole corporate member. Application of this statement is effective for the JPA's fiscal year ended June 30, 2017. This statement did not have a significant impact on the JPA's financial statements for the years ended June 30, 2017 and 2016.

GASB has issued Statement No. 82, *Pension Issues*. The objective of this Statement is to address certain issues that have been raised with respect to Statements No. 67, Financial Reporting for Pension Plans, No. 68, Accounting and Financial Reporting for Pensions, and No. 73, Accounting and Financial Reporting for Pensions and Related Assets That Are Not within the Scope of GASB Statement 68, and Amendments to Certain Provisions of GASB Statements 67 and 68. Specifically, this Statement addresses issues regarding (1) the presentation of payroll-related measures in required supplementary information, (2) the selection of assumptions and the treatment of deviations from the guidance in an Actuarial Standard of Practice for financial reporting purposes, and (3) the classification of payments made by employers to satisfy employee (plan member) contribution requirements. This statement became effective for periods beginning after June 15, 2016, and should be applied retroactively. This statement did not have a significant impact on the JPA's financial statements for the years ended June 30, 2017 and 2016.

Note 3 – Cash and Investments

At June 30, 2017 and 2016, cash and investments are reported in the accompanying statements of net position as follows:

	2017	2016
Cash and cash equivalent	$ 6,007,921	$ 4,352,680
Investments	976,730	1,000,650
	$ 6,984,651	$ 5,353,330

At June 30, 2017 and 2016, cash and investments consisted of the followings:

	2017	2016
Deposits:		
Pooled with Las Virgenes Municipal Water District	$ 1,035,616	$ 337,517
Investments:		
California Local Agency Investment Fund	4,972,305	4,015,163
U.S. Government Sponsored Agency Security	976,730	1,000,650
Total cash and investments	$ 6,984,651	$ 5,353,330

Demand Deposits

At June 30, 2017 and 2016, the carrying amounts of cash deposits were $1,035,616 and $337,517, respectively, which were fully insured and/or collateralized with securities held by the pledging financial institutions in the LVMWD's name as discussed below.

The California Government Code requires California banks and savings and loan associations to secure the LVMWD's cash deposits by pledging securities as collateral. This Code states that collateral pledged in this manner shall have the effect of perfecting a security interest in such collateral superior to those of a general creditor. Thus, collateral for cash deposits is considered to be held in the LVMWD's name.

The fair value of pledged securities must equal at least 110% of the LVMWD's cash deposits. California law also allows institutions to secure the LVMWD's deposits by pledging first trust deed mortgage notes having a value of 150% of the LVMWD's total cash deposits. LVMWD may waive collateral requirements for cash deposits, which are fully insured up to $250,000 by the Federal Deposit Insurance Corporation. LVMWD, however, has not waived the collateralization requirements.

Local Agency Investment Fund

The JPA's investments with Local Agency Investment Fund (LAIF) include a portion of the pool funds invested in Structured Notes and Asset-Backed Securities. These investments include the following:

- **Structured Notes** - debt securities (other than asset-backed securities) whose cash flow characteristics (coupon rate, redemption amount, or stated maturity) depend upon one or more indices and/or that have embedded forwards or options.
- **Asset-Backed Securities** - the bulk of which are mortgage-backed securities, entitle their purchasers to receive a share of the cash flows from a pool of assets such as principal and interest repayments from a pool of mortgages (such as CMO's) or credit card receivables.

LAIF is overseen by the Local Agency Investment Advisory Board, which consists of five members, in accordance with State statute.

As of June 30, 2017, the JPA had $4,972,305 invested in LAIF, which had invested 2.89% of the pool investment funds in Structured Notes and Asset-Backed Securities compared to $4,015,163 and 2.81% at June 30, 2016.

Note 3 – Cash and Investments (Continued)

Investments Authorized by the California Government Code and the JPA's Investment Policy

The JPA follows LVMWD's investment policy. The table below identifies the investment types that are authorized for the JPA by the California Government Code (or the LVMWD's investment policy, where more restrictive). The table also identified certain provisions of the California Code (or the LVMWD's investment policy, where more restrictive) that address interest rate risk, credit risk, and concentration of credit risk.

Authorized Investment Type	Maximum Maturity	Percentage of Portfolio	Maximum Investment In One Issuer
U.S. Treasury Bills, Bonds and Notes	5 Years	None	None
U.S. Government Sponsored Agency Securities	5 Years	None	None
Time Deposits	1 Year	25%	None
Repurchase Agreements	30 days	10%	None
California Local Agency Investment Fund (LAIF)	None	None	$50,000,000
Bond issued by Local Agencies or States	5 Years	None	None
Money Market Mutual Funds	None	20%	10%
Certificates of Deposits	5 years	25%	$250,000

Disclosures Relating to Fair Value Measurement

Information about the fair value measurement of the JPA's investments is as follows:

	2017			2016		
	Significant Other Observable Input (Level 2)	Uncategorized	Total	Significant Other Observable Input (Level 2)	Uncategorized	Total
California Local Agency Investment Fund	$ -	$ 4,972,305	$ 4,972,305		$ 4,015,163	$ 4,015,163
U.S. Government Sponsored Agency Security	976,730	-	976,730	1,000,650	-	1,000,650
Total Investments	$ 976,730	$ 4,972,305	$ 5,949,035	$ 1,000,650	$ 4,015,163	$ 5,015,813

Disclosures Relating to Interest Rate Risk

Interest rate risk is the risk that changes in market interest rates will adversely affect the fair value of an investment. Generally, the longer the maturity of an investment, the greater the sensitivity of its fair value to changes in market interest rates. One of the ways that the JPA manages its exposure to interest rate risk is by purchasing a combination of shorter term and longer term investments and by timing cash flows from maturities so that a portion of the portfolio is maturing or coming close to maturity evenly over time as necessary to provide the cash flow and liquidity needed for operations.

The JPA's investments of $5,949,035 and $5,015,813 at June 30, 2017 and 2016, respectively, made up of investments in LAIF and U.S. Government Sponsored Agency Securities at June 30, 2017 and 2016. Investments in LAIF are highly liquid, as deposits can be converted to cash within twenty-four hours without loss of interest. Investment in U.S. Government Sponsored Agency Securities matures in the year ending June 30, 2021, four years from June 30, 2017.

Note 3 – Cash and Investments (Continued)

Disclosures Relating to Credit Risk

Generally, credit risk is the risk that an issuer of an investment will not fulfill its obligation to the holder of the investment. This is measured by the assignment of a rating by a nationally recognized statistical rating organization. Investments in LAIF in the amounts of $4,972,305 and $4,015,163 at June 30, 2017 and 2016, respectively, are unrated. Investment in U.S. Government Sponsored Agency Securities in the amount of $976,730 and $1,000,650 are unrated and rated AA+ at June 30, 2017 and 2016, respectively.

Disclosures Relating to Custodial Credit Risk

The custodial credit risk for investments is the risk that, in the event of the failure of the counterparty (e.g., broker-dealer) to a transaction, a government will not be able to recover the value of its investment or collateral securities that are in the possession of another party. The California Government Code and LVMWD's investment policy do not contain legal or policy requirements that would limit the exposure to custodial credit risk for investments. With respect to investments, custodial credit risk generally applies only to direct investments in marketable securities. Custodial credit risk does not apply to a local government's indirect investment in securities through the use of government investment pools (such as LAIF).

Note 4 – Capital Assets

Summary of changes in capital assets for the year ended June 30, 2017 is as follows:

	Balance July 1, 2016	Additions	Deletions	Reclassification	Balance June 30, 2017
Capital assets, not being depreciated:					
Land and land rights	$ 12,258,791	$ -	$ -	$ -	$ 12,258,791
Construction in progress	2,217,135	4,304,341	(400,084)	(3,081,609)	3,039,783
Total capital assets, not being depreciated	14,475,926	4,304,341	(400,084)	(3,081,609)	15,298,574
Capital assets, being depreciated:					
Sewer and treatment plant	118,814,505	-	(268,939)	2,136,266	120,681,832
Compost plant and farm	70,971,846	-	(56,548)	280,994	71,196,292
Recycled water system	33,348,740	-	-	664,349	34,013,089
Total capital assets, being depreciated	223,135,091	-	(325,487)	3,081,609	225,891,213
Less: accumulated depreciation					
Sewer and treatment plant	(79,279,313)	(2,793,048)	263,514	-	(81,808,847)
Compost plant and farm	(46,378,352)	(1,894,081)	36,352	-	(48,236,081)
Recycled water system	(19,193,366)	(941,916)	-	-	(20,135,282)
Total accumulated depreciation	(144,851,031)	(5,629,045)	299,866	-	(150,180,210)
Total capital assets, being depreciated, net	78,284,060	(5,629,045)	(25,621)	3,081,609	75,711,003
Total capital assets, net	$ 92,759,986	$ (1,324,704)	$ (425,705)	$ -	$ 91,009,577

Note 4 – Capital Assets (Continued)

Summary of changes in capital assets for the year ended June 30, 2016 is as follows:

	Balance July 1, 2015	Additions	Deletions	Reclassification	Balance June 30, 2016
Capital assets, not being depreciated:					
Land and land rights	$ 12,258,791	$ -	$ -	$ -	$ 12,258,791
Construction in progress	10,250,247	2,814,135	-	(10,847,247)	2,217,135
Total capital assets, not being depreciated	22,509,038	2,814,135	-	(10,847,247)	14,475,926
Capital assets, being depreciated:					
Sewer and treatment plant	117,534,566	-	-	1,279,939	118,814,505
Compost plant and farm	63,275,176	-	(367,174)	8,063,844	70,971,846
Recycled water system	31,845,276	-	-	1,503,464	33,348,740
Total capital assets, being depreciated	212,655,018	-	(367,174)	10,847,247	223,135,091
Less: accumulated depreciation					
Sewer and treatment plant	(75,900,762)	(3,378,551)	-	-	(79,279,313)
Compost plant and farm	(44,506,034)	(2,195,433)	323,115	-	(46,378,352)
Recycled water system	(18,275,609)	(917,757)	-	-	(19,193,366)
Total accumulated depreciation	(138,682,405)	(6,491,741)	323,115	-	(144,851,031)
Total capital assets, being depreciated, net	73,972,613	(6,491,741)	(44,059)	10,847,247	78,284,060
Total capital assets, net	$ 96,481,651	$ (3,677,606)	$ (44,059)	$ -	$ 92,759,986

Note 5 – Due to Participants

During the year ended June 30, 2017 and 2016, additional advances received from the participants were in the amount of $19,300,025 and $14,480,333, respectively. The advances received from the participants are used to pay for the operating, capital, and administrative cost of the JPA. At June 30, 2017 and 2016, due to participants were in the amount of $7,422,380 and $5,811,697, respectively.

Note 6 – Participant Contributions

Cost of the JPA is shared by the participants based on the following methodology. Variable operation and maintenance cost are prorated between the participants based on the average sewage flow contributed to the joint system. Fixed operating and maintenance cost are prorated between the participants based on the participants' respective capacity rights in the facility. Capital costs are prorated between the participants based on the participants' respectively capacity rights in the facility. Annual audit costs are shared equally. General and administrative costs are based on the actual cost of labor. Lastly, land acquisition costs are shared based on the capacity rights in the project for which the land is acquired. As of January 1, 2005, the joint system, except for the sewer collection system, is allocated by 70.6% to LVMWD and 29.4% to TSD.

Note 6 – Participant Contributions (Continued)

The following is the summary of the contributions made by the participants for the years ended June 30, 2017 and 2016:

	2017			
	Operating Contribution	Percentage	Capital Contribution	Percentage
LVMWD	$ 8,483,081	67.6%	$ 3,124,743	70.5%
TSD	4,058,695	32.4%	1,307,957	29.5%
Total	$ 12,541,776	100.0%	$ 4,432,700	100.0%

	2016			
	Operating Contribution	Percentage	Capital Contribution	Percentage
LVMWD	$ 7,623,145	66.1%	$ 1,986,781	70.6%
TSD	3,917,234	33.9%	827,356	29.4%
Total	$ 11,540,379	100.0%	$ 2,814,137	100.0%

Note 7 – Risk Management

The JPA is covered under the LVMWD's insurance policies. The LVMWD retained Tolman & Wiker Insurance Service, LLC for general liability, property, auto and physical damage. The coverage for the general liability provided for $11 million per occurrence and $61 million for the aggregate, with a $50,000 self insured retention limit per occurrence. The coverage for the property provided for $61 million per occurrence with a self insured retention limit of $50,000 per occurrence.

During the past three fiscal years, none of the above programs of protection have had settlement or judgments that exceeded pooled or insured coverage. There have been no significant reductions in pooled or insured liability cover from coverage in the prior year.

Note 8 – Commitment and Contingencies

Lawsuits

The JPA is a defendant in various lawsuits. Although the outcome of these lawsuits is not presently determinable, it is the opinion of the JPA's legal counsel and the JPA's management that resolution of these matters will not have a material adverse effect on the financial condition of the JPA.

Note 8 – Commitment and Contingencies (Continued)

Commitments

As of June 30, 2017, the JPA had five material construction commitments evidenced by contractual commitments with contractors in the amount of $776,831.

Project Name	Contractual Commitment
Centrate Tank Equalization Project	$ 122,620
Reservoir Water Study	189,974
Tapia Process Air Pipeline Evaluation	148,438
Calleguas Intertie Design	190,883
Amendment Bid Design Services	124,915
Total	$ 776,831

As of June 30, 2016, the JPA had five material construction commitments evidenced by contractual commitments with contractors in the amount of $2,319,964.

SUPPLEMENTARY INFORMATION

Las Virgenes-Triunfo Joint Powers Authority
Schedule of Changes in Participants' Advance Accounts
For the Years Ended June 30, 2017 and 2016

	Construction Funds		Operating Funds	
	Tapia Plant and Truck Sewers		Operations and Maintenance	
	Las Virgenes Municipal Water District	Triunfo Sanitation District	Las Virgenes Municipal Water District	Triunfo Sanitation District
Due to (from) Participants - July 1, 2016	$ 161,397	$ (63,101)	$ 2,319,689	$ 1,076,196
Advance from participants	364,378	697,231	8,492,174	4,658,798
Interfund activities with participants	-	-	-	-
Constructions costs allocated	(218,879)	(91,148)	-	-
Change in fair market value of LAIF	(17,222)	(11,315)	-	-
Change in fair market value of LAIF - Prior year	(2,368)	(775)	-	-
Grant income	-	-	-	-
Other miscellaneous income	-	-	-	-
Billings to participants for operating expenses	-	-	(8,492,174)	(4,067,010)
Billings to participants from replacement fund interest income	-	-	-	-
Interest income from (to) participants	2,229	1,464	-	-
Adjustment billing to participants for operating fund	-	-	-	-
Recycled water billings to Triunfo Sanitation District	-	-	-	(688,676)
Due to (from) Participants - June 30, 2017	$ 289,535	$ 532,356	$ 2,319,689	$ 979,308

(Continued)

	Construction Funds		Operating Funds	
	Tapia Plant and Truck Sewers		Operations and Maintenance	
	Las Virgenes Municipal Water District	Triunfo Sanitation District	Las Virgenes Municipal Water District	Triunfo Sanitation District
Due to (from) Participants - July 1, 2016	$ 338,007	$ 190,448	$ 2,319,846	$ 1,061,709
Advance from participants	26,442	(168,929)	7,626,632	4,664,471
Constructions costs allocated	(459,666)	(191,419)	-	-
Change in fair market value of LAIF	2,368	775	-	-
Change in fair market value of LAIF - Prior year	(1,317)	(328)	-	-
Grant income	-	-	-	-
Other miscellaneous income	254,746	106,085	-	-
Billings to participants for operating expenses	-	-	(7,626,632)	(3,920,982)
Billings to participants from replacement fund interest income	-	-	-	-
Interest income from (to) participants	817	267	-	-
Adjustment billing to participants for operating fund	-	-	(157)	(65)
Recycled water billings to Triunfo Sanitation District	-	-	-	(728,937)
Due to (from) Participants - June 30, 2017	$ 161,397	$ (63,101)	$ 2,319,689	$ 1,076,196

(Continued)

Las Virgenes-Triunfo Joint Powers Authority
Schedule of Changes in Participants' Advance Accounts (Continued)
For the Years Ended June 30, 2017 and 2016

	Operating Funds			
	Replacement of Capital Assets			
	Las Virgenes Municipal Water District	Triunfo Sanitation District	Total	
			2017	2016
Due to (from) Participants - July 1, 2015	$ 1,074,315	$ 1,243,201	$ 5,811,697	$ 5,952,119
Advance from participants	3,309,667	1,777,777	19,300,025	14,480,333
Interfund activities with participants	-	-	-	-
Constructions costs allocated	(2,905,863)	(1,216,810)	(4,432,700)	(2,814,137)
Change in fair market value of LAIF	-	-	(28,537)	3,143
Change in fair market value of LAIF - Prior year			(3,143)	(1,645)
Grant income	-	-	-	38,936
Other miscellaneous income	1,269	528	1,797	421,402
Billings to participants for operating expenses	-	-	(12,559,184)	(11,547,614)
Billings to participants from replacement fund interest income	9,093	8,315	17,408	7,235
Interest income from (to) participants	-	-	3,693	1,084
Adjustment billing to participants for operating fund	-	-	-	(222)
Recycled water billings to Triunfo Sanitation District	-	-	(688,676)	(728,937)
Due to (from) Participants - June 30, 2016	$ 1,488,481	$ 1,813,011	$ 7,422,380	$ 5,811,697

(Concluded)

	Operating Funds			
	Replacement of Capital Assets			
	Las Virgenes Municipal Water District	Triunfo Sanitation District	Total	
			2016	2015
Due to (from) Participants - July 1, 2015	$ 992,546	$ 1,049,563	$ 5,952,119	$ 6,533,985
Advance from participants	1,535,145	796,572	14,480,333	16,629,994
Constructions costs allocated	(1,527,115)	(635,937)	(2,814,137)	(3,656,798)
Change in fair market value of LAIF	-	-	3,143	1,645
Change in fair market value of LAIF - Prior year	-	-	(1,645)	(1,703)
Grant income	27,489	11,447	38,936	-
Other miscellaneous income	42,763	17,808	421,402	-
Billings to participants for operating expenses	-	-	(11,547,614)	(12,935,275)
Billings to participants from replacement fund interest income	3,487	3,748	7,235	5,689
Interest income from (to) participants	-	-	1,084	1,123
Adjustment billing to participants for operating fund	-	-	(222)	-
Recycled water billings to Triunfo Sanitation District	-	-	(728,937)	(626,542)
Due to (from) Participants - June 30, 2016	$ 1,074,315	$ 1,243,201	$ 5,811,697	$ 5,952,119

(Concluded)

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December 4, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Tapia Process Air Improvements Project: Selection of Blowers and Diffusers

SUMMARY:

On May 1, 2017, performance-based specifications for replacement air diffusers and process air blowers at the Tapia Water Reclamation Facility were released to evaluate multiple vendors and technologies through a competitive process to allow selection of equipment that would provide the best overall value to the JPA.

After evaluating proposals for both the blowers and diffuser equipment, it was determined that the diffuser proposal by OTT North America offered the best balance of performance, strong references, capital cost and life-cycle cost. The proposals for blower equipment were evaluated based on the proposed use of the OTT North America diffuser system. The blower proposal by Sulzer ABS was determined to offer the best balance of performance, strong references, capital cost and life-cycle cost.

Selection of equipment prior to the completion of the design is necessary to allow for a comprehensive bid package that is specific to the selected equipment due to varying technologies, electrical needs, quantity required and layout requirements. In order to allow public bidding of the project with the pre-selected equipment, the JPA Board must make a finding pursuant to Public Contract Code Section 3400 that the particular materials or products are designated by specific brand or trade name in order to obtain a necessary item that is only available from one source.

RECOMMENDATION(S):

Approve the selection of Sulzer ABS process air blowers and OTT North America air diffusers based on a competitive process, and find that the selected equipment must be designated by specific trade name in order to obtain necessary items that are each only available from one source for construction of the Tapia Process Air Improvements Project.

FISCAL IMPACT:

No

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

There is no direct and immediate financial impact associated with selecting the blower and diffuser equipment. However, selection of the equipment based on a competitive process including consideration of both capital and life-cycle costs will ensure the best value to the JPA upon future award of a construction contract for the project.

DISCUSSION:

With approval of the JPA Board, Pacific Advanced Civil Engineering (PACE) prepared a performance-based specification for the procurement of retrievable fine bubble air diffusers and process air blowers for the Tapia Process Air Improvements Project. A requests for proposals (RFP) was sent to various equipment manufacturers using the specifications prepared by PACE.

In order to compare all of the manufacturers' proposals, evaluation criteria was established, and each criterion was assigned a weight. A higher weight as assigned to more important elements of the evaluation criteria. Each equipment solution proposed was rated on a scale with the highest score indicating the most competitive or best value. For each criterion, the score and weight were multiplied and the products were added to arrive at a total score.

Attached for reference are technical memos that describe the evaluation of the proposals. The appendices are not included but available upon request. Following is a summary:

Fine Bubble Air Diffusers:

Six proposals were received from the following four vendors:

- Aquarius Technologies, Inc.
- Environmental Dynamics International
- OTT (two options submitted)
- SSI (two options submitted)

The proposals had significantly different designs with different types of diffusers and a varying number of grids and diffusers. All of the retrievable fine bubble air diffuser equipment proposed met the requirements of the RFP. The diffuser proposals were evaluated based upon capital cost, life-cycle cost, performance, fabrication and feedback from references. Based on the criteria ranking and evaluation, staff recommends selecting Option No. 1 by OTT North America. The two options provided by OTT ranked very closely, but Option No. 1 was slightly favored due to the higher performance outweighing the lower capital cost of Option No. 2.

Process Air Blowers:

Six proposals were received from the following vendors:

- Sulzer/ABS
- Neuros
- PillAerator
- Next Turbo
- Atlas Copco
- Spencer

The proposals varied in design with different bearing types, physical footprints, drive types, cooling systems, horsepower and numbers of blowers. Based on the criteria ranking and evaluation, staff recommends selecting the proposal by Sulzer. The Sulzer equipment will have the lowest overall cost-of-ownership, and the manufacturer received a perfect reference score of 10. Although Neuros scored 0.5 points higher than Sulzer and provided value in the form of initial capital cost and energy efficiency, Sulzer offers the most significant potential savings to the JPA when maintenance costs are taken into account.

A 10-Year Maintenance and Repairs Contract with two 5-year renewal options will be provided by Sulzer. The contract includes site visits by the manufacturer's certified service technicians to perform all repairs, part replacements and maintenance services, including but not limited to, lubricant changes, bearing services and electrical components, as well as any repairs as a result of operating the blowers under site conditions. Due to the significantly higher cost of the Neuros Maintenance Contract, the JPA will save nearly $104,000 over the first 10-year period and save nearly $270,000 over the first 20-year period by selecting the Sulzer/ABS process air blowers.

Prepared by: Jared Q. Adams, P.E., Associate Engineer

ATTACHMENTS:

Tapia Process Air Blower Evaluation TM
Tapia Fine Bubble Air Diffuser Evaluation TM

PACE
Advanced Water Engineering

Technical Memorandum

Date: November 1, 2017

To: Mr. Eric Schlageter, Las Virgenes Municipal Water District

From: Duong Do, PE

Re: Tapia Water Reclamation Facility Process Air Improvements
Recommendation for Process Air Blower Equipment B058

At the direction of the Las Virgenes Municipal Water District (LVMWD), PACE prepared a performance specification for the procurement of process air blower equipment for the Tapia Water Reclamation Facility (WRF) Process Air Improvements Project. Using the specifications prepared by PACE, Requests for Proposals (RFP) were sent to blower equipment manufacturers. Proposals from each manufacturer were provided to the District and comprehensive equipment summary tables, calculations, reference questionnaires, and the original RFP are provided in the attachments to this memo. The following six manufacturers provided proposals:

- **Atlas Copco**
- **Neuros**
- **Next Turbo**
- **PillAerator**
- **Spencer Turbine**
- **Sulzer/ABS**

The District is upgrading the existing Tapia WRF process air system to improve process and energy efficiencies. As part of the upgrades, the District plans to install a new fine bubble aeration system into the existing aeration basins coupled with new high efficiency blowers.

The Process Air Upgrades will include replacing the three existing Roots Blowers with three new high speed, high efficiency blowers. The existing multistage Hoffman blowers will also be removed as part of this project.

The new high efficiency blowers will deliver air to the Secondary Aeration Basins via an existing air header system that feeds each basin independently. In addition, the Process Air Blowers will also provide air for mixing and aeration of the Other Air Components, which include five process channels, grit removal system, the RAS Re-aeration basins, and the filtration system.

The performance specifications required equipment and processes to be designed based on the design parameters summarized in *Table 1*.

Table 1 – Project Design Parameters and Requirements.

Parameter	Value
Project Location	Tapia WRF, Calabasas, CA
Wastewater Type	Municipal
Elevation above Sea Level	494-feet
Exposure	Outdoor with ambient temperatures from 32 to 105°F
Seismic Information	Site Class: C Seismic Importance Factor (I): 1.25 S_s: 1.989 S_1: 0.701 TL: 8s Seismic Design Category: D
Type of Wastewater Treatment Process	4-Stage Bardenpho
Process Air Upgrades Treatment Design Flow	5.5 - 12.0 MGD
Number of Blowers	Varies as needed with redundant largest unit
Average Hours of Blower Operation per day	24-hours continuous operation
Normal Operating Water Depth over Diffusers*	13.5-feet
Nominal Operating Water Depth	14.5 feet
Design Dissolved Oxygen Concentration	2.0 mg/L
Aeration Period	24-hr continuous operation

*based on retrievable grid fine bubble diffuser system

The performance specifications required equipment and processes to be designed based on the influent parameters and aeration requirements summarized in *Table 2*. The aeration requirements are based on the effluent quality requirements that are summarized in *Table 3*.

Table 2 – Influent Conditions and Aeration System Design Parameters

	Flow (MGD)	BOD (mg/L) (Min/Max)	TKN (mg/L) (Min/ Max)	MLSS (mg/L)	OTR (lbs/day) (Ave)	OTR (lbs/day) (Max)	Min Design SOTE (%)*
4-Stage Bardenpho	5.5	160/240	35/ 46	2000	8,683	12,079	36
	6.8	160/240	35/ 46	2000	9,996	13,826	35
	7.5	160/240	35/ 46	3000	11,172	15,614	34
	9.3	160/240	46	4000	14,491	17,882	33
	12	184/ 240	50	4500	21,074	24,403	30

*Minimum Design SOTE at Average OTR and based on using only 80% of installed diffusers.

Table 3 – Total Air Flow and Pressure Requirements based on Treatment Flow Capacities

Flow (MGD)	Pressure Req'd (PSI)	Ave Secondary Process (SCFM)	Max Secondary Process (SCFM)	Other Air Process (Min/Max) (SCFM)	Min Total Process Air (SCFM)	Max Total Process Air (SCFM
5.5	7.5	2294	4,089	3050/ 4500	5,344	8,589
6.8	7.5	2,758	4,805	3050/ 4500	5,808	9,305
7.5	7.6	3,174	5,392	3050/ 4500	6,224	9,892
9.3	7.6	4,111	6,769	3050/ 4500	7,161	11,269
12	8	6,782	9,201	3050/ 3750	9,832	12,951

The six proposals are all packaged high speed blowers capable of meeting the design requirements; however, there are differences between the designs, including bearing type, size of blower, drive type, cooling system, horsepower, and number of blowers. The equipment is summarized in Table 4, for a more detailed summary of the proposals, refer to the Attachment A (Equipment Summary Sheet).

Table 4 – Equipment Summary

	Atlas Copco	Neuros	Next Turbo	PillAerator	Spencer	Sulzer/ABS
Model	ZB250VSD	NX300-C600	GTB-T40XY	LP-14000	AJ215-3	HST40-U400-1-L
Type of Bearing	Non-Contact - Magnetic	Air Bearing	Ceramic/ Hybrid Ball	Magnetic	Active Magnetic Bearing	Magnetic
Horsepower per Blower	350	300	300	400	215	400
Total number of Blowers	4	3	3	3	4	3
Footprint per Blower	9' 8" x 4' 7"	7' X 4.6'	4' X 12'	9' 7" x 7'	7.1' x 4'	5.8 X 8.2
Enclosure	Electrolytically Zinc Coated Steel	Coated Carbon Steel	No Enclosure	Coated Steel	Coated Carbon Steel	Coated Galvanized Steel
Cooling	Closed Loop Water Circuit Cooled by ambient air	Water-Cooled	Air-to-Oil	Air & Water	Liquid-Air	Air Cooled
Motor	PMSM	PMSM	Induction	PMSM	PMSM	PMSM
Input Voltage	480V	480V	4160V	480V	480V	480V

Recommendation:

In order to compare each manufacturer's proposal, evaluation criteria were established and assigned a weight; the higher the weight, the more important the aspect is to the project. Each equipment solution proposed is rated on a scale, with the highest score indicating most competitive or best. For each criterion, the score and the weight are multiplied together. The sum of the multiplied numbers for each proposal determine the total score. The Evaluation Criteria Ranking is shown in *Table 5* with the recommendation following.

Table 5 – Evaluation Criteria Ranking

Criteria	Weight	Atlas	Neuros	Next Turbo	PillAerator	Spencer	Sulzer
		Scoring Scale 1-6					
Performance	*10*	1.0	6.0	2.0	4.0	3.0	5.0
Reference List	*10*	4.0	5.0	1.5	3.0	1.5	6.0
Full Maintenance and Repair Contract	*9*	2.0	4.5	4.5	1.0	3.0	6.0
Capital Cost	*8*	1.0	5.5	3.0	5.5	2.0	4.0
20-Year Life Cycle Cost	*7*	1.5	4.5	3.0	4.5	1.5	6.0
Installation Requirements	*6*	1.5	4.0	6.0	4.0	1.5	4.0
Completion of Supply	*6*	3.5	3.5	3.5	3.5	3.5	3.5
Delivery Schedule	*5*	3.5	6.0	1.5	5.0	1.5	3.5
Completeness of Response	*4*	4.0	5.5	2.0	2.0	2.0	5.5
Performance Bond	*y/n*	y	y	y	y	y	y
Total		**150**	**323**	**193**	**232.5**	**144**	**322.5**

Note: combined score for each manufacturer equals 21 for each category.

All of the blowers proposed met the requirements of the Performance-based Specifications (RFP). The District has expressed the importance of performance, references, full maintenance and repair contract, capital cost, life cycle cost, and 20-year life cycle cost. Based on the Criteria Ranking and evaluation developed as part of the performance-based specifications, the following are the recommendation for the equipment proposed:

1. **Sulzer/ABS**
2. **Neuros**
3. **PillAerator**
4. **Next Turbo**
5. **Atlas Copco**
6. **Spencer**

The equipment proposed by Sulzer offered the best balance of high performance, strong references, with low capital cost and life-cycle cost, and scored at or near the top of almost every category for a total of 322.5 points out of a possible 390 points. Even though Neuros scored 0.5 points higher than Sulzer, Sulzer provided a lower overall cost-of-ownership to District and a perfect reference score of 10. Therefore, Sulzer/ABS is the recommended blowers for the Tapia WRF Process Air Improvement Project.

Summary of Evaluation

The purpose of *Table 5 – Evaluation Criteria Ranking* is to help the District narrow the equipment selection process. The Criteria Ranking shows that both Neuros and Sulzer are the front runners with total scores of 323 and 322.5 points, respectively. PillAerator, ranked third, is nearly 90 points below the leaders.

With the score between Neuros and Sulzer being 0.13% of each other (0.5 out of a possible 390 points), both equipment manufacturers are considered even. PACE further evaluated both the Sulzer and Neuros blowers from an overall cost-of-ownership standpoint (See *Table 6* below). Neuros offers a capital cost that is approximately $17,700 less than Sulzer. Its blowers also have higher operating efficiencies than Sulzer that would reduce the power cost by approximately $9,300 per year. However, Neuros's Maintenance Contract is approximately $21,400 more annually. This results in an annually savings of more than $12,100 by going with the Sulzer blowers (See *Table 7* below). Over the first 10 years, the District will save nearly $104,000. Over the first 20 years, the District will save nearly $270,000 by installing Sulzer Blowers. Both of these savings are present-day cost and do not include cost escalation.

Table 6 – Summary of Cost Difference Between Sulzer and Neuros

	Sulzer	Neuros	Difference
Total Capital Cost	$768,320	$750,600	$17,720
Average Annual Power Cost	$225,961	$216,679	$9,282
Annual Maintenance Contract Cost (First 10-yrs)	$60,650	$275,180	-$214,530
Maintenance Contract (Years 11-15)	$27,950	$137,590	-$109,640
Maintenance Contract (Years 16-20)	$81,440	$137,590	-$56,150

Table 7 – Total Cost Savings to District over the First 10 years with Sulzer Blowers over Neuros

	Year 1	Year 2-10	Difference
Total Capital Cost Difference	$17,720	$0	
Power Cost Difference	$9,282	$9,282	
Annual Maintenance Contract Cost	-$21,453	-$21,453	
Annual Cost Difference	$5,549	-$12,171	-$103,990

Criteria Evaluation

The following sections discussing the evaluation criteria and weighting parameters used to score each criteria, and the criteria definitions are listed at the end of this technical memorandum.

Performance (Weight = 10):

All stated performance data listed in the manufacturer proposals is designed to meet the requirements listed in *Exhibits C & D*. The proposals are ranked as summarized in *Table 8*. The highest performance for each category is highlighted in green, and performances within the specified range of the best are scored the same and are shown in red. The scores are shown in parenthesis for each parameter. The scores are totalized at the bottom to determine the overall score each system received.

Table 8 – Performance Parameters

	Atlas	Neuros	Next Turbo	PillAerator	Spencer	Sulzer
Minimum Air Flow at 7.5 psi (SCFM)	2,750 (3.0)	3,543 (1.0)	2,600 (4.5)	2,600 (4.5)	1,879 (6.0)	3,163 (2.0)
Maximum Air Flow at 8.0 psi (SCFM)	6,500 (1.5)	7,266 (3.0)	6,500 (1.5)	8,500 (4.0)	14,844 (6.0)	8,829 (4.5)
Guaranteed Wire to Air kW - Design Point 1	149.8 (1.0)	130.0 (6.0)	141.5 (3.0)	131.6 (5.0)	144.0 (2.0)	136.1 (4.0)
Guaranteed Wire to Air kW - Design Point 2	203.2 (1.0)	179.0 (5.5)	189.3 (2.5)	181.1 (4.0)	191.0 (2.5)	177.8 (5.5)
Guaranteed Wire to Air kW - Design Point 3	235.8 (1.0)	212.0 (5.5	244.7 (2.0)	226.8 (3.0)	222.0 (4.0)	212.4 (5.5)
Guaranteed Wire to Air kW - Design Point 4	268.3 (2.0)	239.0 (6.0)	275.6 (1.0)	243.7 (5.0)	253.0 (3.5)	251.7 (3.5)
Guaranteed Wire to Air kW - Design Point 5	303.1 (1.5)	267.0 (5.5)	304.2 (1.5)	269.6 (5.5)	289.0 (3.0)	277.3 (4)
Guaranteed Wire to Air kW - Design Point 6	345.5 (1.0)	301.0 (6.0)	325.9 (2.5)	305.3 (5.0)	325.0 (2.5)	309.2 (4.0)
Guaranteed Wire to Air kW - Design Point 7	377.6 (1.0)	333.0 (5.5)	346.3 (3.0)	337.4 (4.0)	356.0 (2.0)	336.3 (5.5)
Guaranteed Wire to Air kW - Design Point 8	419.2 (1.0)	375.0 (5.0)	377.4 (5.0)	380.5 (3.0)	396.0 (2.0)	373.8 (5.0)
Guaranteed Wire to Air kW - Design Point 9	492.0 (1.0)	461.0 (4.0)	459.0 (4.0)	464.0 (2.0)	463.0 (4.0)	430.1 (6.0)
Total Score	**15.0**	**53.0**	**30.5**	**45.0**	**37.5**	**50.0**
Total Performance Score (1-6)	**1**	**6**	**2**	**4**	**3**	**5**

Performance is evaluated based on the wire-to-air power usage (kW) at the nine (9) design points listed in Exhibit D. Blowers that have lower guaranteed Wire to Air kW draw are scored higher at each design point. Parameters within 1% of the best are scored the same (shown in red). For example, in a situation where the power draws are 100 kW, 100.5 kW, and 102 kW, the 100 kW and 100.5 kW are scored the same, while 102 kW is scored lower.

In addition to the power usage, blowers are evaluated based on their minimum flow and maximum flow. A blower with a lower minimum flow is advantageous, because in times of very low demand the blower is more likely to be able to produce the required flow without wasting energy by blowing off excess air. Blowers with higher maximum flows are scored higher, because although all the blowers met the design requirements, the ability to produce more air if the air demand exceeded the design amount due to high flow or loading is an advantage. Air flow ranges within 5% of the min or max criterion are scored the same.

From the performance data, Spencer has the largest operating range with lowest minimum air flow and highest maximum air flow. Neuros has the most number of multiple design points with the best Guaranteed Wire to Air power consumption (lowest power consumption in kW). Sulzer/ ABS is near the lowest wire-to-air kW at most design points but is second to Neuros. Overall, Neuros is scored the highest since the overall cumulative scores from all design points are the greatest, followed by Sulzer, PillAerator, Spencer, Next Turbo, and finally, Atlas Copco.

Reference List (Weight = 10):

The proposals are scored based on references provided by the manufacturers from previous projects. Each vendor was asked to provide a minimum of 3 references installed in the United States, up to 6 references. The references were contacted a maximum of three times each, until either three references were reached, or all six references had been contacted three times.

Questionnaires were filled out from each responsive reference, with the most important question being the overall satisfaction with the system from 1-10. The overall satisfaction score from the references that were reached is averaged to determine the overall score. The questionnaires are included in Attachment

C. References that did not meet the requirement of being in operation for a minimum of 2 years in the United States of America are given a score of 1 for the evaluation, as summarized in *Table 9*

Table 9 – Qualified Reference Scores

	Atlas[2]	Neuros	Next Turbo[1]	PillAerator[4]	Spencer[3]	Sulzer
Reference 1	7	9	1	1	1	10
Reference 2	9	10	1	9	1	10
Reference 3	8	8	1	1	1	10
Reference 4 (if used)	-	-	1	-	-	10
Average	8.0	9.0	1.0	3.7	1.0	10.0
Score	**4.0**	**5.0**	**1.5**	**3.0**	**1.5**	**6.0**

[1] Reference 1, 2 & 4 have been in operation less than 2 years. Reference 1,2 & 3 are outside of the US
[2] Reference 4 (not used in scoring) installed for only 8 months
[3] Reference 1 installed since 2016 (less than 2 years)
[4] Reference 3 installed in Canada, Reference 1&4 installed for less than 2 years, Reference 4 not used in scoring

Sulzer received the highest scores in this category, because they have four qualifying responses who gave the overall equipment the highest score (10). Neuros received the second highest average scores from qualifying references. Although Next Turbo's references scores are typically high (9-10), the references did not meet the requirements. Similarly, Spencer did not provide any references that meet the criteria; therefore, both Next Turbo and Spencer received the lowest scores.

The actual scores when not subjected to the minimum installation requirements of the RFP are shown in *Table 10.* As shown in *Table 10*, almost all of the references scored the equipment well and are generally satisfied with their blowers, although some references did not meet the minimum requirements.

Table 10 – Raw Reference Scores

	Atlas	Neuros	Next Turbo	PillAerator	Spencer	Sulzer
Reference 1	7	9	10[1]	6[1]	9.5[1]	10
Reference 2	9	10	10[1]	9	-	10
Reference 3	8	8	10[1]	9[1]	-	10
Reference 4 (if used)	8.5	-	9[1]	8.5[1]	-	10
Average	8.1	9.0	9.8	8.1	9.5	10.0

[1]Reference did not meet installation requirements of the RFP

Full Maintenance and Repair Contract (Weight = 9):

The proposals are scored based on their ability to provide a full maintenance and Repair Contract meeting the requirements of the RFP and based on the cost of these contracts. The scoring summary is shown in *Table 11*. The cost for the maintenance and repair contract is extremely important, because not only does it represent the 20-year life-cycle cost of equipment maintenance, but it is also correlates with equipment down-time for repairs.

Table 11 – Maintenance and Repair Contract Evaluation

	Atlas Corp.	Neuros	Next Turbo	PillAerator	Spencer	Sulzer
Cost - 10 Year Service Contract	$381,191 (2.0)	$275,180 (3.0)	$407,700 (1.0)	$64,000 (5.0)	$258,000 (4.0)	$60,650 (6.0)
Cost – 5 Year Service Contract Extension 1	$228,776 (3.0)	$137,590 (4.0)	$127,513 (5.0)	Did not provide (1.0)	$397,629 (2.0)	$27,950 (6.0)
Cost - 5 Year Service Contract Extension 2	$228,776 (3.0)	$137,590 (4.0)	$109,794 (5.0)	Did not provide (1.0)	$477,041 (2.0)	$81,440 (6.0)
Met Requirements of RFP	2	4.5	4.5	1	4.5	4.5
Total	10.00	15.50	15.50	8.00	12.50	22.50
Score	**2**	**4.5**	**4.5**	**1**	**3**	**6**

PillAerator declined to provide the two 5-year options and are therefore scored the lowest because they did not meet a major requirement of the RFP. Atlas Copco required a cap on the liquidated damages for a delay in service, so they scored lower for not meeting the requirements of the RFP. All of the other manufacturers met the exact requirements of the RFP and are scored accordingly. Clarification letters were sent out to each manufacturer to ensure that they all met the same requirements. It should be noted that the maintenance and repair contracts are optional, and may be accepted or declined by the District.

Capital Cost (Weight = 8):

The proposals are scored based on overall capital cost, which includes the equipment cost, step-down transformer cost (if required), cost for the supply and performance bonds, FOB jobsite delivery, and the manufacturer start up site services. The capital cost is summarized in *Table 12*.

Table 12 – Capital Cost

	Atlas	Neuros	Next Turbo	PillAerator	Spencer	Sulzer
Blowers - Equipment Cost ($)	$1,041,927	$648,263	$770,543	$600,000	$1,134,439	$648,520
Step down Transformer Cost ($)	$93,485	$61,516	n/a	$141,000	$106,403	$82,530
Performance Bond Cost ($)	$0	$15,000	$21,916	Letter of Credit	$47,195	$12,600
Start-up/ Training Cost ($)	$44,334	$20,821	$42,700	Included	$34,522	$10,600
Total Freight (FOB to Jobsite) ($)	$3,158	$5,000	$8,000	Included	$18,113	$14,070
Total Capital Cost	$1,182,904	$750,600	$846,159	$741,000	$1,340,672	$768,320
Score (1-6)	**1.0**	**5.5**	**3.0**	**5.5**	**2.0**	**4.0**

PillAerator provided the equipment with the lowest capital cost, however, Neuros is within 2% of this cost, so they were scored the same. The capital cost for Sulzer is third (about 4% higher than PillAerator), followed by Next Turbo is the fourth best (about 10-15% more than PillAerator). Atlas Copco and Spencer are significantly more expensive. It should be noted that Atlas Copco and Spencer each proposed four blowers, which appears to directly correlate with the increase in capital cost.

20-year Life Cycle Cost (Weight = 7):

The proposals are scored based on the 20-year life cycle cost (LCC). The 20-year LCC includes capital cost, operation and maintenance (O&M) cost, and power cost for 20 years at an assumed 5% interest rate per year. The O&M cost is separated into maintenance and power costs.

The for the maintenance cost, it is assumed that the District will purchase the 10-year maintenance contract and two 5-year extensions on day 1. All manufacturers other than PillAerator provided the 20-year warranty. Since PillAerator only provided a 10-year warranty, this analysis assumes that their blowers and a second 10 year warranty will be repurchased at the same price after year 10. Cost of operator time for filter changes and other items taking less than 15 minutes are not included in this analysis because they are considered minor and are assumed to be similar for all proposed equipment.

The power cost is calculated by using the average of the air flow demands shown in *Table 3* for various plant flow rates, and assuming the plant's average daily flow will be 6.8 MGD at day 1, gradually increasing to 7.5 MGD at year 5, and then gradually increasing to 9.3 MGD at year 20. The kW required for the average air demand is interpolated between the guaranteed kW provided for flows between 5,000 and 13,000 SCFM in Exhibit D. Finally, to calculate the power cost, the interpolated kW is assumed to run 24/7 and is multiplied by the cost of $0.098/kWh. The yearly power cost is summarized in *Table 13* for each manufacturer.

Table 13 – Yearly Power Cost

Year	Atlas Copco	Neuros	Next Turbo	PillAerator	Spencer	Sulzer
1	$217,956	$194,897	$224,832	$202,777	$205,393	$201,116
2	$221,483	$197,815	$228,130	$204,708	$208,791	$205,176
3	$225,010	$200,734	$231,427	$206,639	$212,190	$209,235
4	$228,536	$203,652	$234,724	$208,570	$215,589	$213,295
5	$232,063	$206,571	$238,021	$210,501	$218,988	$217,354
6	$234,461	$208,499	$239,830	$212,337	$221,372	$219,127
7	$236,859	$210,427	$241,639	$214,172	$223,756	$220,899
8	$239,257	$212,355	$243,448	$216,008	$226,139	$222,672
9	$241,654	$214,283	$245,257	$217,844	$228,523	$224,445
10	$244,052	$216,210	$247,066	$219,679	$230,907	$226,218
11	$246,450	$218,138	$248,875	$221,515	$233,291	$227,990
12	$248,848	$220,066	$250,684	$223,351	$235,675	$229,763
13	$251,246	$221,994	$252,492	$225,186	$238,059	$231,536
14	$253,644	$223,922	$254,301	$227,022	$240,442	$233,308
15	$256,042	$225,850	$256,110	$228,857	$242,826	$235,081
16	$258,440	$227,778	$257,919	$230,693	$245,210	$236,854
17	$260,838	$229,706	$259,728	$232,529	$247,594	$238,626
18	$263,235	$231,634	$261,537	$234,364	$249,978	$240,399
19	$265,633	$233,562	$263,346	$236,200	$252,362	$242,172
20	$268,031	$235,490	$265,155	$238,035	$254,745	$243,944
Average	**$244,687**	**$216,679**	**$247,226**	**$220,549**	**$231,591**	**$225,961**

The total 20-Year LCC is summarized in *Table 14*, and complete life-cycle cost calculations are included in Attachment E. Sulzer has the lowest life-cycle cost due to the low capital cost, relatively low operating cost, and the low cost for the 20-year maintenance and repair contract. Neuros has the second lowest LCC, and is only more expensive than Sulzer in terms of the 20-year maintenance and repair contract. PillAerator, despite re-purchasing the blowers and maintenance contract at year 10 came in third, within 5% of Neuros, so both Neuros and PillAerator are scored in second place. Next Turbo scored in fourth, with a relatively low capital and 20-year maintenance cost, but the highest power cost. All of the 20-year LCCs are within ~30% of the best, however, Atlas Copco and Spencer scored the worst due to the high capital cost and high cost for the maintenance and repair contract.

Table 14– 20 Year Life Cycle Cost Summary

	Atlas	Neuros	Next Turbo	PillAerator[1]	Spencer	Sulzer
Capital Cost	$1,182,905	$750,600	$846,159	$741,000	$1,082,672	$768,320
20-Year Warranty	$838,745	$550,360	$645,013	$869,000	$1,132,666	$170,040
Average Yearly Power Cost	$244,687	$216,679	$247,226	$220,549	$231,591	$225,961
Total 20-Year LCC (NPV)	**$5,020,115**	**$3,960,121**	**$4,531,962**	**$4,010,979**	**$5,051,209**	**$3,712,579**
Score (1-6)	**1.5**	**4.5**	**3.0**	**4.5**	**1.5**	**6.0**

Installation Requirements (Weight = 6):

All of the proposed equipment will fit within the footprint of the existing blower room, however, some of the equipment differs in electrical and mechanical requirements. Next Turbo scored highest because they are the only manufacturer to propose 4160V motors. All other equipment requires transformers to step down to 480V. Since the Next Turbo machines run on 4160V, less modifications are required to the existing electrical system. Atlas Copco and Spencer are scored the lowest in this category because they provided four blowers. There are three existing blower bays at Tapia, and although two blowers could be installed in a single bay, more mechanical piping and connections, and more electrical work are required for four blowers compared to three. All other blowers have similar installation requirements and are scored the same. The scores for this criteria are summarized in *Table 15*.

Table 15 – Installation Requirements Summary Table

	Atlas	Neuros	Next Turbo	PillAerator[1]	Spencer	Sulzer
Score	1.5	4.0	6.0	4.0	1.5	4.0

Completion of Supply (Weight = 6):

The proposals are ranked based on the completion of the proposal to include things necessary for proper operation of the equipment supply. All of the manufacturers proposed complete and fully operational blower systems. Each proposal met the equipment supply requirements of the performance specification, therefore, all manufacturers are scored the same, as shown in *Table 16*.

Table 16 – Completion of Supply

	Atlas	Neuros	Next Turbo	PillAerator[1]	Spencer	Sulzer
Score	3.5	3.5	3.5	3.5	3.5	3.5

Delivery Schedule (Weight = 5):

Delivery schedule is based on the durations provided in the proposals: submittal schedule, fabrication schedule and delivery schedule. Submittal schedule is the time required to produce a complete submittal package from receiving a notice to proceed. Fabrication schedule is the time needed to manufacture the system after approved submittals are received. The delivery schedule includes the duration of the delivery from the place of manufacturing to the jobsite. The results from the proposals are summarized in *Table 17*. Neuros has the quickest delivery schedule of 2.5 months, and is thus scored the highest. All of the other manufacturers required 7.5 to 8 months total, with Atlas Copco and Sulzer scoring slightly better than Next Turbo and Spencer.

Table 17 – Fabrication and Delivery Schedules

Delivery Schedule	Atlas	Neuros	Next Turbo	PillAerator	Spencer	Sulzer
Submittal Schedule (months)	1.5	0.5	2.0	1.3	3.0	1.0
Fabrication and Delivery Schedule (months)	6.0	2.0	6.0	4.8	5.0	6.5
Total Delivery Time including Submittal (months)	7.5	2.5	8.0	6.0	8.0	7.5
Score	**3.5**	**6**	**1.5**	**5**	**1.5**	**3.5**

Completeness of Responses (Weight = 4):

The proposals are ranked based on the completeness of the proposal, which required all vendors to provide all the requested information on the RFP without any inferences from the Engineer or the District.

Sulzer and APG Neuros provided the material and information as requested by the RFP. As a result, these vendors are ranked the highest. APG Neuros provided the most organized proposal with a clear and easy-to-find format that allows for quick referencing. Even though this component does not factor into the ranking for this category, PACE would like to acknowledge APG Neuros' effort.

Atlas Copco was missing important information needed to perform the evaluation. They did not provide a technical approach for service repairs, did not acknowledge the liquidated damage requirements and did not provide a list of maintenance requirements. Atlas Copco is given a score of 3.

Spencer, PillAerator and Next Turbo are all ranked lowest in the category. They did not provide the proper pricing for Full Maintenance and Repair Contract. Spencer combined the capital cost and the Maintenance Service Contract together, which did not allow for separate evaluation of those costs. PillAerator and Next Turbo provided only the base cost for the Maintenance Service Contract along with an "à la carte" pricing for the different maintenance/repair services. This format is not consistent with the requirement of the RFP and does not allow for proper comparison with other vendor's pricing.

All information that is required for this evaluation was clarified after the initial proposals, however, vendors are scored based on the completeness of their original proposal. *Table 18* summarizes the scores for completeness of each vendor's proposal.

Table 18 – Completeness of Response

	Atlas	Neuros	Next Turbo	PillAerator[1]	Spencer	Sulzer
Score	4	5.5	2	2	2	5.5

Performance Bond (Weight = y/n):

The proposals are ranked on willingness to agree to the Performance Bond provided by PACE ensuring the equipment will meet the performance guaranteed in the proposals. All manufacturers agreed to a performance bond.

Criteria Definitions

Capital Cost: The Fixed Price Proposal cost to purchase and deliver the complete equipment F.O.B. jobsite, along with all the associated requirements. Cost within 2% of the lowest is scored the same.

20-year Life Cycle Cost: Evaluation of capital cost and O&M over 20-year period in today's value based on 5% annual interest rate. Cost within 5% of the lowest is scored the same.

O&M Costs:	Blower & related equipment power requirements at the design points, consumables, labor, and other operation and maintenance costs on a yearly basis.
Full Maintenance & Repair Service Contract:	Ranking based on the cost and terms of the contract offering. The Contract shall cover a period of the first 10 years with the District's option to extend for two (2) 5-year periods. The contract shall include site visits by manufacturer's certified service technicians to perform all repairs, replacements, and maintenance services, including but not limited to lubricant changes, bearing services, core replacement, electrical and controls components, etc., as well as any repairs that results from operating the blowers under site operating conditions defined within these specifications, as well as any repairs that can result from the installation environment at the WRF, including temperature, moisture, etc. The contract shall include parts, labor, travel and any other expenses required to perform the work. The service shall include a minimum of one annual site visit by a certified service technician for blower inspection and service. Each manufacturer shall provide a detailed approach in their proposal to address technical support and service calls. The approach should include a step-by-step procedure on the actions the District should take during an alarm or blower malfunction. Each manufacture shall propose a guaranteed onsite response time once it is determined that a technician will be required to be onsite to address the problem. The service contract shall include language stating that if the technician is not onsite within the guaranteed onsite response time period, the manufacture will pay <u>liquidated damages of $500 for each day of delay.</u> Each manufacture shall provide a list of incidental maintenance items that the District can perform to minimize the need for the manufacturer's service technician be onsite. Incidental maintenance shall not exceed 15 minutes in labor time. An example of incidental maintenance is performing an air filter change. All equipment parts for incidental maintenance shall still be provided by the manufacturer. The cost of the future 5-yr options will be based on present day cost and shall be tied to an inflation rate of no more than 0.75% increase per quarter or to the inflation rate stated by the Los Angeles Tender Price Index determined by Rider Levett Bucknall, whichever of the two is lower.
Performance:	Meets the performance requirements identified in the General Design Requirements. Both factory and field testing to verify stated performance of equipment will be required. The manufacturer shall assist in coordinating requested factory site visits/testing for the District and shall include the travel cost for one District's representative to be onsite for factory testing verification. Wire-to-Air KW within 1% will be scored the same. For example, in a situation where the blower KW are 100 KW, 101 KW and 101.5 KW. 100 KW and 101 KW will be scored the same, while 101.5 KW will be scored lower. All other parameters within 5% will be scored the same.

Installation Requirements:	Requirements for aeration piping connections; blower footprint and dimensions; manufacturer supplied ancillary equipment (i.e., step-down transformer, Master PLC, harmonic filters, inlet and discharge piping etc.). Systems with minimal field installation requirements will be scored higher.
Performance Bond:	Willingness to agree to terms of the Performance Bond *(Exhibit A)* and to provide a performance guarantee for 2 years on the equipment. Proposals not accepting the terms of the bond will not be considered. The Performance bond shall be for 100 percent of the replacement value of the equipment. The bonding company shall have a policy-holder rating of A+ and a financial rating of "Class XV" in the most recent edition of "Best Key Rating Guide". The bonding company shall be licensed to do business in the State of California.
Completion of Supply:	The completeness of the proposal to include all equipment necessary for the proper operation of the equipment as required by this Specifications.
Completion of Response:	The completeness of the proposal to include all requested information for evaluation of the proposal without inferences from the Engineer or the District.
Installation Reference List:	List of similar equipment installations, including WWTP capacity; number of units; reference current contact information (WWTP name, location, person, phone number – See Exhibit B). Each vendor shall provide an installation list with contact information for a minimum of 3 systems in operation for a minimum of 2 years in the United States of America (no more than 6 references). The District will attempt 3 calls to each reference. Each successful reference shall be asked to rank their overall experiences from 1 – 10 (10 being highest). Scores will be based on average ranking from the responsive references. At minimum, 3 references will be scored. If there are less than 3 responsive references, non-responses will be given a ranking of 1. For example, if only 2 references responded, then a score of 1 will be given to the missing third reference. The average of the three scores will be used in the evaluation. The District reserves the right to contact additional references. If additional references are contacted by the District, those references will be average into the score. Bids from manufacturers lacking the U.S. installation requirements, but meeting all technical and performance requirements of these specifications, may be considered by the District if the manufacturer provides a 7-year performance bond in lieu of evidence of experience and operation (7-year performance bond includes the first 2-year performance bond required by all manufacturers as listed above and another 5 year extension). See Performance bond criteria above. The cost of such bonding shall be included in the Base Bid price at the time of proposal.
Delivery Schedule:	Proposed equipment will be at the job site when needed. Submittals shall include a schedule outlining the anticipated time to construct equipment and deliver to job site. The schedule shall be broken down into fabrication time and delivery time. The total time required from notice of selection to arrival of equipment on site shall be clearly indicated. Language shall be provided in the proposal stating that schedule delay

(for both shop drawing submittals preparation and equipment fabrication and delivery) will result in liquidated damage of $1,000 per calendar day with a cap at 50% of the equipment cost.

Attachments

A. Equipment Summary Sheet (Exhibit C, All Manufacturers)
B. Performance Summary Sheet (Exhibit D, All Manufacturers)
C. Reference Questionnaires
D. Maintenance And Repair Contract Summary Matrix
E. LCC Calculations
F. Original RFP

PACE
Advanced Water Engineering

Technical Memorandum

Date: August 15, 2017

To: Mr. Eric Schlageter, Las Virgenes Municipal Water District

From: Duong Do, PE
Charles Falzone, MS, PE

Re: Tapia Water Reclamation Facility Process Air Improvements
Recommendation for Fine Bubble Diffuser Equipment B058

At the direction of the Las Virgenes Municipal Water District (LVMWD), PACE prepared a performance specification for the procurement of retrievable fine bubble diffuser equipment for the Tapia Water Reclamation Facility (WRF) Process Air Improvements Project. Using the specifications prepared by PACE, Requests for Proposals (RFP) were sent to fine bubble diffuser equipment manufacturers. The following four manufacturers provided proposals, abbreviated proposals from each manufacturer are included in the attachments of this memo along with the comprehensive equipment summary and the original RFP:

- **Aquarius Technologies, Inc.**
- **Environmental Dynamics International (EDI)**
- **OTT (2 Alternative Bids Submitted)**
- **SSI (2 Alternative Bids Submitted)**

The new fine bubble diffuser system will be installed in specifically designed retrievable (removable) grids along the bottom of the six existing aeration basins. The grid arrangements will allow for sufficient aeration capacity to meet aeration demands up to 12 MGD.

The performance specifications required equipment and processes to be designed based on the design parameters summarized in *Table 1*.

Table 1 – Project Design Parameters and Requirements.

Parameter	Value
Project Location	Tapia WRF, Calabasas, CA
Wastewater Type	Municipal
Elevation above Sea Level	490-feet
Ambient Temperature Range	20°F - 110°F
Exposure	Submerged, tank opens to ambient condition
Water Temperature Range	55°F - 80°F

Design Parameter	Value
Type of Wastewater Treatment Process	4-Stage BNR
Process Air Upgrades Treatment Design Flow	5.5 - 12.0 MGD
Number of Aeration Basins	6
Basin Nominal Floor Dimensions	160 ft x 30 ft
Basin Nominal Top Dimensions*	156 ft x 25 ft
Nominal Operating Water Depth**	14.5 ft
Nominal Volume per Basin	508,000 gallons
α - Alpha Factor	0.55
B – Beta Factor	0.95
Design Dissolved Oxygen Concentration	2.0 mg/L
Aeration Period	24-hr continuous operation

*"Top Dimensions" refers to the clear opening available to retrieve the diffuser grids from the basin due to the angle or "Y" wall configuration of the basin (See Figure 3).
** Conical floor section in basins will be leveled as part of the project upgrades. Operating water level will be raised to 14.5 from existing 14.1 as part of the basins' upgrades.

The performance specifications required equipment and processes to be designed based on the influent parameters and aeration requirements summarized in *Table 2*. The aeration requirements are based on the effluent quality requirements summarized in *Table 3*.

Table 2 – Influent Conditions and Aeration System Design Parameters

Process	Flow (MGD)	BOD (mg/L) (Min/Max)	TKN (mg/L) (Min/ Max)	MLSS (mg/L)	OTR (lbs/day) (Ave)	OTR (lbs/day) (Max)	Min Design SOTE (%)*
4-Stage BNR	5.5	160/290	35/ 46	2500	8,654	14,136	28
	6.9	160/ 290	35/ 46	3000	10,114	16,108	28
	7.5	160/290	35/ 46	3000	11,304	17,513	27
	9.3	160/290	46	4000	14,212	21,276	25
	12	184/ 290	50	4500	21,319	26,030	24

*Minimum Design SOTE at Average OTR and based on using **only 80% of installed diffusers due to swing zones**.

Table 3 – Effluent Quality Requirements

Effluent Quality Requirements	Value
BOD_5	10 mg/L
Ammonia*	3.1 / 2.3 mg/L
Nitrate - Nitrite	8 mg/L
Phosphorous	3 mg/L

*Effluent Ammonia limits are 3.1 mg/L to Malibu Creek and 2.3 mg/L to Los Angeles River.

Evaluation:

In order to compare each manufacturer's proposal, evaluation criteria were established and assigned a weight; the higher the weight, the more important the aspect is to the project. Each equipment solution proposed was rated on a scale, with the highest score indicating most competitive or best. For each criterion, the score and the weight were multiplied together. The sum of the multiplied numbers for each equipment solution was used to arrive at the total score. The equipment with the highest total score will be the recommended selection. The criteria definitions are listed below, with the Evaluation Criteria Ranking following in *Table 5*.

Criteria Definitions

Capital Cost:	The Fixed Price Proposal cost to purchase and deliver the complete equipment F.O.B. jobsite, along with all the associated requirements listed on 1a – 1g of the Section 1 Proposal Requirements. Cost within 5% of the lowest is scored the same.
20-yr Life Cycle Cost:	Evaluation of capital cost and O&M over 20-year period in today's value based on 5% annual interest rate. Cost within 5% of the lowest is scored the same.
O&M Costs:	Diffuser & related equipment replacement, labor, and other operation and maintenance costs on a yearly basis. O&M Cost shall also include electrical cost based on Vendor's guaranteed SOTE. Evaluation shall include a 10% annual replacement of diffusers
Fabrication/ Material of Construction:	Durability/quality of materials of construction. Higher durability and higher quality of construction will be scored higher
Performance:	Performance of the system will be based on Standard Oxygen Transfer Efficiency (SOTE) for different process air rates and treatment flows. Also evaluation of flux rates; pressure losses etc. See Section 4.0 for design requirements and Exhibit C. The higher the SOTE, the higher the score. Efficiencies within 0.5% of the higher SOTE will be scored the same. For example, in a situation where the SOTEs are 31%, 31.5%, and 32%. 32% and 31.5% will be scored the same, while 31% will be scored lower.
Installation Requirements:	Requirements for aeration piping connections; basin floor requirements; manufacturer supplied support system; etc. Systems with minimal field installation or modifications will be scored higher.
Retrievability Requirements:	Requirements for retrieving/ removing the submerged diffusers for maintenance or repair using District-provided overhead crane, including the placement of the aeration grids back into service. Systems that can be retrieved or removed with minimum requirements and staff will be scored higher. Vendors have the option to provide its own retrieval mechanism; in which case, both retrieval options will need to be shown. Simplicity and minimal requirements will be scored higher.
Supply Bond:	Willingness to provide a Supply Bond for 100% of the equipment's contract amount according to the terms of *Exhibit A.* Proposals not accepting the terms of the Supply Bond will not be considered.
Performance Bond:	Willingness to agree to terms of the Performance Bond *(Exhibit B)* for 100% of the equipment's contract amount and to provide a performance guarantee for 2 years on the equipment. Proposals not accepting the terms of the bond will not be considered.
Completion of Supply:	The completeness of the proposal to include all requested information for evaluation of the proposal without inferences from the Engineer or the District.

Reference List: List of similar equipment installations, including WRF process; number of units; reference current contact information (WRF name, location, person, phone number). Each vendor shall provide an installation list with contact information for a minimum of 5 systems in operation in the United States of America (no more than 10 references). 2 of the 5 installations shall be a retrievable-type installations.

The District will attempt 3 calls to each reference (up to 5 successful references only – 2 of which must be retrievable type). Each successful references shall be asked to rank their overall experiences from 1 – 10 (10 being highest). Scores will be based on average response ranking from 5 references. Non-responses will be given a ranking of 1.

Bids from manufacturers lacking the U.S. installation requirements for US-installed retrievable systems, but meeting all technical and performance requirements of these specifications, may be considered by the District if the manufacturer provides a satisfactory five (5) year maintenance bond in lieu of evidence of US installation and operation. Maintenance bond shall be for 100 percent of the contract value of the equipment. The cost of such bonding shall be included in the Base Bid price at the time of proposal.

Delivery Schedule: Proposed equipment will be at the job site when needed. Submittals shall include a schedule outlining the anticipated time to construct equipment and deliver to job site. The schedule shall be broken down into fabrication time and delivery time. The total time required from notice of selection to arrival of equipment on site shall be clearly indicated.

Summary

The six proposals from the four manufacturers had significantly different designs, with different types of diffusers, and a varying number of grids and diffusers. The proposed equipment from each manufacturer is summarized in *Table 4*. For a more detailed summary of the proposals, refer to the attached Equipment Summary Sheet (Exhibit C).

Table 4 – Equipment Summary

	Aquarius	EDI	OTT (Option 1)	OTT (Option 2)	SSI (Base Bid)	SSI (Alternate Bid)
Type of diffuser	9" Disc	Panel	Tube	Tube	Tubular	Tubular
Number of retrievable diffuser grids	32	38	64	58	44	44
Total number of diffusers	6160	2080 arms	1408	1276	812 Sets	812 Sets
Total Diffuser area installed (ft^2)	2526	5491	4844	4389	3857	3857
Diffuser membrane material	EPDM	EPDM	Silicone	Silicone	EPDM	PTFE Coated EPDM
Wet Weight of Grid (lbs)	5800	3810	1250	1250	±850	±850

Despite the variation in the designs, all manufacturers generally met the design requirements. In general, the proposals with more diffusers had better performance. Systems with more grids weight less and provide more operational flexibility, but will cost more to install due to the number of connections to the existing air header. The evaluation ranking according to the criterion in the RFP is summarized in *Table 5* below. The total score reflects the score each for each evaluation criteria multiplied by the weight of each criteria, with high scores given to the systems that ranked best in each category.

Table 5 – Evaluation Criteria Ranking

Criteria	Weight	Aquarius	EDI	OTT1	OTT2	SSI 1	SSI 2
		Scoring Scale 1-6					
Capital Cost	*5*	1	2	5	6	4	3
Performance	*5*	4	6	5	3	2	2
Fabrication/ Material of Construction	*5*	2	2	5	5	2	5
20-Year Life Cycle Cost	*5*	2	1	5.5	5.5	4	3
Reference List	*5*	1.0	2.0	5.5	5.5	3.5	3.5
Retrievability	*4*	1.5	1.5	5	5	3	5
Completion of Supply	*4*	5	2	2	2	5	5
Installation Requirements	*3*	4	2	2	2	5.5	5.5
Delivery Schedule	*3*	1	6	3.5	3.5	3.5	3.5
Performance Bond	*y/n*	y	y	y	y	y	y
Supply Bond	*y/n*	y	y	y	y	y	y
Total Score		**91**	**103**	**174.5**	**169.5**	**134**	**147**

Note: combined score for each manufacturer equals 21 for each category.

Recommendation

All of the retrievable fine bubble diffuser equipment proposed met the requirements of the Performance-based Specifications (RFP). The District has expressed the importance of capital cost, life cycle cost, performance, fabrication, and feedback from references. Based on the Criteria Ranking developed as part of the performance-based specifications, the following are the ranks for the equipment proposed as summarized in *Table 5* above:

1. **OTT Option 1**
2. **OTT Option 2**
3. **SSI Alternate Bid**
4. **SSI Base Bid**
5. **EDI**
6. **Aquarius**

OTT proposed equipment that offered the best balance of high performance, with the lowest capital cost and life-cycle cost. The two options provided by OTT rank very close, with Option 1 being slightly favored due to the higher performance outweighing the lower capital cost of Option 2. Both OTT's options include silicon membranes, which is generally considered to be a superior membrane material because it is less susceptible to fouling than EPDM. As a result, a selection of OTT Option 1 is recommended. The following sections discuss the evaluation criteria and weighting parameters used to score each criteria.

Capital Cost (Weight = 5):

The proposals were scored based on overall capital cost, which includes the cost for the supply bond, the performance bond, FOB jobsite delivery, and the manufacturer start up site services which is summarized in *Table 6*. The overall capital cost ranges from $264,800 to $490,280. The capital cost evaluation shows that OTT Option 2 is about $20,000 less expensive than the next lowest bidder (OTT Option 1), while Aquarius has the highest capital cost by about $105,000.

Table 6 – Capital Cost

	Aquarius	EDI	OTT1	OTT2	SSI1	SSI2
Equipment	$ 440,000	$ 372,640	$ 261,450	$ 241,100	$ 263,625	$ 306,800
Supply Bond	$ 13,200	$ 11,180	$ 7,400	$ 7,400	$ 875	$ 900
Deilvery (FOB to Jobsite)	$ 15,000	Included	$ 7,000	$ 6,500	$ 11,000	$ 11,000
Performance Bond	$ 15,480	Incl. w/SB	$ 9,800	$ 9,800	$ 5,900	$ 6,500
Start up	$ 6,600	Included	Included	Included	$ 5,500	$ 5,500
Total Capital Cost	**$ 490,280**	**$ 383,820**	**$ 285,650**	**$ 264,800**	**$ 286,900**	**$ 330,700**
Capital Cost Score (1-6)	**1**	**2**	**5**	**6**	**4**	**3**

Performance (Weight = 5):

In evaluating the performance of the fine bubble aeration system, several parameters are interconnected, such as floor coverage, water depth, fine bubble formation, etc. These parameters affect the transfer efficiency (SOTE), which in turn affects airflow requirements and diffuser quantity. Some of these parameters are proprietary and are difficult to evaluate, which requires the manufacturers to provide a balanced design that takes into account the proprietary advantages of their system. Even though it is not clear how the stated values were derived, each manufacturer is willing to provide independent testing data to validate their design parameters. Therefore, the parameters used were acceptable. The SOTE is the most important performance parameter, because it presents a fair evaluation that is independent of any proprietary advantages or disadvantages and will significantly impact the operational cost of the blowers and the plant as a whole. Since the District expects influent flow ranges of 5.5 MGD to 9.3 MGD for the next 20 years, the average SOTE at these treatment capacities for both the Average and Maximum OTRs were scored. By scoring both the Average and Maximum OTR, the SOTE counted twice towards the overall score.

Other important parameters affecting performance are air flow rate (SCFM), operating range, and pressure at the point of connection. The air flow rate, which is related to the SOTE, will directly affect the amount of power used during aeration, and thus the average air flow (SCFM) was scored for all treatment capacities. Similarly, the average pressure at point of connection was scored because it will directly affect the amount of power used. The operating range was scored, because it represents the turndown of the system and will affect the ability to treat low flows without over aerating or creating potential fouling issues associated with low flux. The operating range was calculated by multiplying the allowable flux (SCFM/ft^2) by the square footage of membranes installed.

Other performance parameters, including total diffuser area, number of diffusers and flux are summarized in Table 6 below, however, these parameters were not scored because there is not a fair comparison between different diffuser technologies (i.e. tube vs disc). For example, much less diffuser area is required for disc diffusers to achieve the same SOTE as tube diffusers because tube diffusers experience coalition of the fine bubbles coming from the sides and bottom of tube diffusers, thus increasing bubble size (i.e. coarser bubbles). Many more disc diffusers are required to achieve the same SOTE as tube diffusers because each diffuser has a much smaller area. Due to these relationships, disc diffuser systems are typically designed with a higher flux than tube diffusers without a direct numerical relationship to the performance of the system.

All stated performance data listed in the manufacturer proposals was designed to meet the OTR requirements listed in *Table 2*. The proposals were ranked based on the list below and as summarized in *Table 7*. The highest performance for each category is highlighted in green (where applicable), and scores are shown in parenthesis for parameters which were scored. The scores are totalized at the bottom to determine the overall score each system received.

SOTEs within 0.5% of the higher SOTE were scored the same. For example, in a situation where the SOTEs are 31%, 31.5%, and 32%. 32% and 31.5% are scored the same, while 31% will be scored lower. Similarly, pressures within 0.1 psi were scored the same, because even though 0.1 psi represents less than a 5% difference in total pressure, it will lead to significantly higher operational cost over the lifespan of the system. Other performance parameters within 5% of the best received the same score. For example, if three manufacturers had SCFMs of 4000, 4150, and 4300 the 4000 and 4150 would receive the same score because the difference is less than 5%, but the 4300 SCFM would receive a lower score, because it is more than 5% above 4000 SCFM.

Table 7 – Performance Parameters

	Aquarius	EDI	OTT1	OTT2	SSI1	SSI2
Fine Bubble Diffuser Type	Disc	Tube	Tube	Tube	Tube	Tube
SOTE % – 5.5 MGD, Avg OTR [1]	32.38%	34.37%	36.60%	35.20%	29.30%	29.50%
SOTE % – 5.5 MGD, Max OTR [1]	30.43%	32.20%	33.00%	31.70%	28.90%	29.00%
SOTE % – 6.8 MGD, Avg OTR [1]	31.75%	33.70%	35.50%	34.10%	29.00%	29.20%
SOTE % – 6.8 MGD, Max OTR [1]	29.93%	31.60%	32.10%	30.70%	28.80%	29.00%
SOTE % – 7.5 MGD, Avg OTR [1]	31.30%	33.14%	34.70%	33.30%	28.90%	28.00%
SOTE % – 7.5 MGD, Max OTR [1]	29.61%	31.30%	31.50%	30.10%	27.90%	29.00%
SOTE % – 9.3 MGD, Avg OTR [1]	30.41%	32.10%	33.00%	31.70%	26.00%	26.10%
SOTE % – 9.3 MGD, Max OTR [1]	28.89%	30.40%	30.80%	28.60%	25.80%	26.00%
SOTE % – 12 MGD, Avg OTR	28.88%	30.43%	30.00%	28.60%	24.90%	25.00%
SOTE % – 12 MGD, Max OTR	28.16%	29.60%	27.10%	24.20%	24.80%	24.90%
Avg SOTE % – 5.5 MGD-9.3 MGD, Avg OTR	31.46% *(3.0)*	33.33% *(4.5)*	34.95% *(6.0)*	33.58% *(4.5)*	28.30% *(1.5)*	28.20% *(1.5)*
Avg SOTE % – 5.5 MGD-9.3 MGD, Max OTR	29.72% *(3.5)*	31.38% *(5.5)*	31.85% *(5.5)*	30.28% *(3.5)*	27.85% *(1.5)*	28.25% *(1.5)*
Total Diffuser Area Installed (ft^2) [2]	2526	5491	4844	4389	3857	3857
Number of Diffusers [2]	6160	2080	1408	1276	812	812
Average SCFM at Avg OTR Condition (All flows) [2]	4295	4061.8	3861	4030	4709.4	4685.8
Average SCFM at Max OTR Condition (All flows) [2]	6495.4	6035.2	6057.4	6342.4	6998.4	6963.4
Average SCFM at Avg & Max OTR (All flows)	5395.2 *(3.0)*	5048.5 *(5.0)*	4959.2 *(5.0)*	5186.2 *(5.0)*	5853.9 *(1.5)*	5824.6 *(1.5)*
Average Flux at Avg OTR Condition (All flows) [2]	2.293	0.924	1.020	1.208	1.501	1.491
Average Flux at Max OTR Condition (All flows) [2]	3.473	1.376	1.600	1.904	1.813	1.801
Operating Flux Range ($SCFM/ft^2$)[4]	1.22-9.75 *(4.0)*	0-6 *(6.0)*	0.29-4.11 *(5.0)*	0.29-4.11 *(3.0)*	0.73-3.15 *(1.5)*	0.73-3.15 *(1.5)*
Average Pressure at Point of Connection [3]	6.334 *(6.0)*	6.53 *(4.0)*	6.64 *(1.5)*	6.67 *(1.5)*	6.55 *(4.0)*	6.534 *(4.0)*
Total Score	*20.5*	*25.0*	*22.0*	*17.5*	*10.0*	*10.0*
Total Performance Score	**4.0**	**6.0**	**5.0**	**3.0**	**1.5**	**1.5**

[1] Average SOTE from 5.5-9.3 MGD scored for Average and Maximum Conditions
[2] Parameter not scored
[3] Pressures within 0.1 psi scored the same
[4] Operating range scored by multiplying flux range by total diffuser membrane area

OTT's fine bubble tube aeration system provides the highest average SOTE, especially in the critical flow range of 5.5-9.3 MGD, where the WWTP is expected to operate in the next 20 years. EDI had the second best SOTE and performed well at the high end of the spectrum (i.e. high flow and/or Max OTR). Aquarius ranked solidly in the middle of the pack, and SSI had the lowest SOTE of the proposed systems.

Overall, EDI was scored the highest, due to the high SOTE, low SCFM requirements, high flux range, and low pressure requirements. OTT's Option 1 was scored the second highest, due to the high SOTE and Low SCFM requirements, and relatively high operating range, but this option lost some points due to the high pressure requirement. OTT's Option 2 was scored third and was similar to their Option 1, but with lower SOTE and higher SCFM. Aquarius had excellent pressure requirements and a good operating range, but was scored fourth due to the lower SOTE and higher SCFM requirements. SSI's Base Bid and Alternate Bid both had the fewest number of diffusers, lowest operating range, lowest SOTE and highest SCFM requirements, which led to them being scored last in this criteria.

Fabrication and Material of Construction (Weight = 4):

The proposals were ranked based on fabrication, including material of construction and ancillary equipment. All the equipment proposed is fabricated with similar materials and meet the requirements detailed in the Performance Specifications. All manufacturers supplied stainless steel fasteners and anchor bolts for the supplied air distribution piping supports.

The systems proposed by Aquarius use solvent weld connections for the connection of the PVC diffuser saddle to the PVC air distribution header. The EDI, OTT and SSI designs each use a mechanical type connection to attach the diffuser saddle to the air distribution header.

Each fabrication type has its advantages and disadvantages. The solvent welded type connections allow for a strong bond of the diffuser saddle to be made with the air distribution header, whereas the mechanical saddle type proposed solutions may become loose or brittle due to thermal expanding and contracting differences associated with different materials in contact with one another. The mechanical type connections do have an advantage in the event that a diffuser assembly is damaged; it may be replaced quickly without having to cut an entire section of pipe out to replace, which would need to be done for a solvent welded connection system.. The connection of the diffusers to the headers are considered to have equally weighted advantages and disadvantages, thus this criterion was scored primarily on the type of material for the diffuser membrane and frame material.

It was reported by tube diffuser references (both SSI and OTT) that rags caused the diffusers to break off during retrieval. This was, however, not given much weight, because the references noted that they had poor primary treatment that need upgrading. Since Tapia has screening followed by primary sedimentation, this issue is mostly likely not applicable to this project.

Aquarius, and EDI, and SSI (Base Bid) proposed diffuser systems using EPDM for the diffuser membrane material and plastic material for the diffuser mount. SSI (Alternate Bid) proposed a diffuser system using PTFE coated EPDM membranes, whereas OTT proposed Silicon membranes. Although EPDM is widely used as a membrane material, Silicon and PTFE coated membranes are considered to be higher quality membrane materials with a greater resistance to fouling. Therefore, OTT and EDI received higher scores for this evaluation criterion. It should be noted that the advantages related to fouling are largely dependent on the quality of the water that the membranes are installed in.

OTT and SSI Alternate bid received the highest score because of the membrane material and because their grids are constructed of a stainless steel frame, which is more corrosion resistant than coated carbon steel. Aquarius, EDI, and SSI (Base Bid) all received the same score, as they all had the same material. EDI's frame is stainless steel, but their ballasts are concrete. The concrete ballasts are subject to chipping if bumped upon removal, and are considered less robust than steel systems. Therefore, the advantages and disadvantages of EDI's system effectively canceled each other out. The Fabrication and Material of Construction scores are summarized in *Table 8*.

Table 8 – Fabrication and Material of Construction

	Aquarius	EDI	OTT1	OTT2	SSI1	SSI2
Fabrication Score	**2**	**2**	**5**	**5**	**2**	**5**

20-year Life Cycle Cost (Weight = 5):

The proposals were scored based on the 20-year life cycle cost (LCC), which is summarized in *Table 9*. The 20-year life cycle cost includes capital cost, operation and maintenance (O&M) cost, and power cost for 20 years at an assumed 5% interest rate per year. The O&M cost is separated into cost of replacement parts, and cost of operator labor. Crane costs are not included in this evaluation.

O&M Costs

The maintenance hours were based on the percent of recommended diffuser replacement and the type of diffuser. The following Assumptions were made:

- Minimum 10% Diffuser Replacement (All manufacturers used 10%, except EDI who recommended 14%).
    - Each tube diffuser set takes 4 minutes to replace, each disc diffuser takes 1 minute to replace.
    - Each tube diffuser set takes 4 minutes to clean, each disc diffuser takes 1 minute to clean.
- Each grid under 1,500 lbs takes two operators 1 hour to retrieve and 1 hour to reinstall (OTT & SSI). Each grid over 1,500 lbs takes two operators 1.5 hours to retrieve and 1.5 hours to reinstall (Aquarius & EDI).
- Operator labor is $42/hour.
- Every grid will be removed and replaced each year.
    - During yearly removal, 10-14% of the diffusers will be replaced and the rest will be cleaned, based on manufacturer recommendation.

Table 9 – Yearly Parts and Labor Cost

Task	Aquarius	EDI	OTT1	OTT2	SSI1	SSI2
Number of Diffusers	6160	2080	1408	1276	812	812
Replacement Rate	10%	14.3%	10%	10%	10%	10%
Cost per Diffuser	$5.00	$63.00	$18.00	$18.00	$19.90	$25.25
Sub-Total Parts	**$3,080**	**$18,739**	**$2,534**	**$2,297**	**$1,616**	**$2,050**
Number of Grids	32	38	64	58	44	44
Retrieve and Reinstall Grids (Man-hrs)	192	228	256	232	176	176
Replace Diffusers (Man-hrs)	10	20	9	9	5	5
Clean Diffusers (Man-hrs)	92.4	59.4	84.5	76.6	48.7	48.7
Cost per Man-hr	$42.00	$42.00	$42.00	$42.00	$42.00	$42.00
Sub-Total Labor	**$12,365**	**$12,912**	**$14,678**	**$13,338**	**$9,648**	**$9,648**
Yearly Parts & Labor Costs	**$15,445**	**$31,650**	**$17,213**	**$15,634**	**$11,264**	**$11,699**

[1] EDI has 2080 diffuser arms, but 1040 sets of two diffuser arms. 1040 diffusers was used to calculate EDI's cleaning & replacement time. Other tube diffuser manufacturers listed the sets of tube diffusers

Power Costs

The power cost was calculated based on the average required SCFM from the manufacturers and the average operating pressure. These parameters were used to determine the average running blower horsepower dedicated to the aeration basins, as shown in *Table 10*. Blower horsepower for other demands (channel mixing, grit, RAS re-aeration, etc.) was not used in this calculation, except to determine the average operating pressure based on headloss of the system. The required blower horsepower was based on the following assumptions:

- Average Aeration SCFM required (provided by manufacturers)
- ICFM = Inlet air flow = 37*(460 + Temp°F) * Wa / (100*Inlet Pressure - RH*Saturated Water Pressure, psia), Wa = equivalent weight of dry air, RH = Relative Humidity
- Operating Pressure = Pressure required by manufacturers at diffusers grids + Pressure due to headloss in aeration piping.
- Site elevation 490 feet MSL
- Average Temperature 70 °F
- Average Relative Humidity 65%
- Overall blower efficiency of 72%.

Table 10 – Blower Power Usage

Company	Flow (MGD)	Design SCFM	Discharge Pressure (psig)	ICFM	Calculated hp	Calculated kW
Aquarius	6.8	3,178	6.25	3281	108.7	81.07
Aquarius	7.5	3,603	6.26	3751	124.5	92.82
Aquarius	9.3	4,663	6.3	4854	162.0	120.81
EDI	6.8	2,937	6.51	3058	105.0	78.32
EDI	7.5	3,345[1]	6.51	3482	119.6	89.20
EDI	9.3	4,322	6.52	4499	154.8	115.42
OTT Option 1	6.8	2,766	6.61	2880	100.3	74.76
OTT Option 1	7.5	3,163	6.61	3293	114.6	85.49
OTT Option 1	9.3	4,178	6.62	4350	151.6	113.07
OTT Option 2	6.8	2,878	6.61	2996	104.3	77.79
OTT Option 2	7.5	3,294	6.61	3429	119.4	89.03
OTT Option 2	9.3	4,359	6.62	4538	158.2	117.97
SSI Base Bid	6.8	3,365	6.47	3503	119.7	89.25
SSI Base Bid	7.5	3,777	6.48	3932	134.5	100.32
SSI Base Bid	9.3	5,272	6.51	5488	188.5	140.59
SSI Alt Bid	6.8	3,348	6.45	3485	118.8	88.56
SSI Alt Bid	7.5	3,758	6.47	3912	133.7	99.68
SSI Alt Bid	9.3	5,248	6.49	5463	187.2	139.58

Based on this calculation, the average running horsepower was between 100-hp to 200-hp for the aeration demands, depending on the flow rate and the manufacturer. Using the kilowatt value calculated in the above, the average power cost to run the blowers shown in *Table 11* was determined based on the following assumptions:

- Assumed average flow:
  - Year 1 flow is 6.8 MGD, which gradually increases to 7.5 MGD by year 5. Flow then gradually increases to 9.8 MGD by year 20.
- $0.098/kWh

Table 11 – Blower Power Costs

Year	Aquarius	EDI	OTT1	OTT2	SSI1	SSI2
1	$69,601	$67,240	$64,179	$66,778	$76,621	$76,027
2	$72,123	$69,575	$66,482	$69,191	$78,996	$78,413
3	$74,644	$71,910	$68,785	$71,604	$81,371	$80,798
4	$77,166	$74,245	$71,088	$74,017	$83,745	$83,184
5	$79,688	$76,580	$73,391	$76,430	$86,120	$85,570
6	$81,289	$78,080	$74,970	$78,087	$88,425	$87,854
7	$82,891	$79,581	$76,548	$79,743	$90,730	$90,137
8	$84,493	$81,081	$78,127	$81,400	$93,035	$92,421
9	$86,094	$82,581	$79,705	$83,056	$95,340	$94,704
10	$87,696	$84,081	$81,284	$84,712	$97,646	$96,988
11	$89,298	$85,581	$82,863	$86,369	$99,951	$99,271
12	$90,900	$87,081	$84,441	$88,025	$102,256	$101,555
13	$92,501	$88,581	$86,020	$89,681	$104,561	$103,838
14	$94,103	$90,081	$87,599	$91,338	$106,866	$106,122
15	$95,705	$91,581	$89,177	$92,994	$109,171	$108,405
16	$97,306	$93,081	$90,756	$94,651	$111,476	$110,689
17	$98,908	$94,581	$92,335	$96,307	$113,782	$112,972
18	$100,510	$96,081	$93,913	$97,963	$116,087	$115,256
19	$102,112	$97,581	$95,492	$99,620	$118,392	$117,539
20	$103,713	$99,082	$97,071	$101,276	$120,697	$119,823
Average	**$88,037**	**$84,413**	**$81,711**	**$85,162**	**$98,763**	**$98,078**

The power cost to run the blowers is affected by the fine bubble diffuser system, however, there is a "base cost" to run the blowers regardless of which system is installed. If the full power cost is used, the power cost represents over 70% of the 20-year LCC. In order to not dilute the LCC, the base cost was removed from the yearly electrical cost. This was done by subtracting the lowest power cost from each vendor. For example, at Year 1 the power cost used are:

- OTT Option 1: $0
- OTT Option 2: $2,599
- Aquarius: $5,422
- SSI Alt Bid: $11,847
- EDI: $12,126
- SSI Base Bid: $12,442

Detailed LCC calculations are included in the Appendix. A summary of the total LCC is shown in *Table 12* using a 5% interest rate to determine the net present value (NPV) of each system.

Table 12 – 20 Year Life Cycle Cost Summary

	Aquarius	EDI	OTT1	OTT2	SSI1	SSI2
Capital Cost	$490,280	$383,820	$285,650	$264,800	$286,900	$330,700
Yearly O&M Cost	$15,456	$31,643	$17,229	$15,614	$11,281	$11,716
Average Yearly Power Cost (Additional)[1]	$6,326	$2,702	$0	$3,451	$17,052	$16,367
20-Year LCC (NPV)	**$760,711**	**$813,083**	**$500,359**	**$500,745**	**$607,268**	**$642,866**
Score (1-6)	**2.0**	**1.0**	**5.5**	**5.5**	**4.0**	**3.0**

[1] Additional power cost calculated by subtracting the lowest power cost from the total power cost.

As shown above, OTT has the lowest 20 year life cycle cost due to the low capital cost and low power cost. The 20 year cost for both options is about the same, with Option 2 saving upfront (capital cost) but costing slightly more per year due to the higher aeration requirement. SSI's proposals had the second

best life cycle costs, due to the relatively low capital cost and low O&M costs. Both systems proposed by SSI have the fewest number of diffusers, which equates to low capital cost and low cost of replacement/cleaning, but the highest electrical costs. SSI's Option 1 had a lower life cycle cost than Option 2 due to the lower capital cost for the less expensive diffuser and lifting frame materials.

Aquarius came in fifth in the life-cycle costs, mostly because they had the highest capital cost. EDI came in last in the life-cycle cost evaluation, mostly because of the high yearly O&M cost associated with replacing 14.4% of the diffusers, compare to 10% by all other manufacturers.

Reference List (Weight = 5):

The proposals were scored based on references provided by the manufacturers from previous projects. Each vendor was asked to provide a minimum of 5 references, two of which had to be retrievable systems, up to 10 references. The references were contacted a maximum of three times each, until either five references were reached, or all ten references had been contacted three times. Questionnaires were filled out from each responsive reference, with the most important question being the overall satisfaction with the system from 1-10. The overall satisfaction scores from the first five responsive references were used to rank the manufacturers.

Of all the manufacturers, OTT and SSI had 5 responsive references, while EDI had three and Aquarius had one. It should be noted that Aquarius had two additional responses, but one was from a person who stated he sells Aquarius Diffusers, and one was from a design engineer. Since these references did not meet the requirements (were not owners, operators, or engineers of a plant with the equipment), they were scored as a zero. The completed surveys are included in the Appendix, and the scores are summarized in *Table 13* below.

Table 3 – Reference List

	Aquarius	EDI	OTT 1	OTT 2	SSI 1	SSI 2
Reference 1	9	9	10	10	5	5
Reference 2	0	7	9	9	8	8
Reference 3	0	7	10	10	8	8
Reference 4	0	0	8.5	8.5	8	8
Reference 5	0	0	10	10	10	10
Average	1.8	4.6	9.5	9.5	7.8	7.8
Reference Score	**1.0**	**2.0**	**5.5**	**5.5**	**3.5**	**3.5**

Almost all of the references scored the aeration equipment well and were generally satisfied with their diffuser systems. OTT received the highest score in this category, because they had five responses who all scored the equipment very well (8.5-10). SSI scored second, mostly because five of their references were responsive. EDI and Aquarius scored the lowest, because several of their references were either unresponsive or in the case of Aquarius did not meet the require criteria.

Retrievability (Weight = 4):

The proposals were ranked based on the retrievability requirements of the system. The weight of the grids was considered the most important parameter, because due to the large distance from the crane to the furthest grid, a much larger and more costly rental crane is required for systems with higher weight. Other parameters that were considered were the height from the base of the grid to the crane pick point, the presence or absence of guide rails, number of grids, and ballast material. A low overall height from the base of the grid to the crane pick point will require a smaller crane, and especially makes a difference if an A-frame crane is used. Guide rails are helpful to ensure that the grids are lowered into the same spot every time, and allow for a smoother placement of the grids. The number of grids is important, because the overall time to retrieve and replace the entire system is higher as the number of grids goes up.

Overall SSI's Alternate Bid was scored the highest, because the grids had the lowest weight (850 lbs per grid), the system included guide rails, the high requirement from the base of the grid to the pick point was low (17-feet), and there was a moderate-to-low number of grids (44).

OTT's Option 1 and 2, and SSI's alternate bid were all scored second highest. OTT's systems had the advantages of weight (1,250 lbs per grid) and guide rails, but had the most grids (58 and 64, respectively) and had a high height requirement from the base of the grid to the pick point (~28-feet). SSI's alternate bid had the advantage of lowest weight (850 lbs per grid) and relatively small number of grids (44), but did not include guide rails and had a high height requirement (28-feet).

Aquarius and EDI were both scored lowest, mostly because of the high weight requirements. Aquarius had an extremely high weight per grid (5,800 lbs), but did however, have advantages of guide rails and low height requirement from the base to the pick point (17'). EDI had a relatively high weight of 3,810 lbs per grid, and was also scored lower because of the lack of guide rails, concrete ballast beams, and high height requirement (29') from the base of the grid to the pick point. EDI and Aquarius both had the advantages of low number of grids (38 for EDI and 32 for Aquarius). The retrievability scores are summarized in *Table 14* below.

Table 14 – Retrievability

	Aquarius	EDI	OTT1	OTT2	SSI Base	SSI Alt
Weight (lbs)	5,800	3,810	1,250	1,250	±850	±850
Height from base to crane attachment	17'	29'	28'	28'	28	17
Ballast Type & Material	Epoxy Coated Steel	Concrete Beam	CS RODS /304 SS	CS RODS/ 304 SS	C Channel with Epoxy Coated	304SS tube with CS/MS BAR
Guide Rails	Yes	No	Yes	Yes	No	Yes
Number of Grids	32	38	64	58	44	44
Retrievability Score (1-6)	**1.5**	**1.5**	**5.0**	**5.0**	**3.0**	**5.0**

Completion of Supply (Weight = 4):

The proposals were ranked based on the completion of supply. All of the manufacturers proposed to provide equipment for a complete and fully operational fine bubble diffuser aeration system within the ditches, (air supply and main air delivery piping provided by others). Each proposal generally meets the performance specification requirements for the aeration process with the following exclusions.

EDI Exclusions

1. Did not provide detailed dimension drawings – drawings provided were not project specific.
2. Diffuser size, pipe size and material were not clearly shown in proposal.
3. Ballast beams are by others (the Contractor), all other manufacturers provide the ballast beams.

OTT Exclusions

1. Did not include layout drawings in initial proposal (layout drawings were later received).
2. Exhibit C was not completed initially.
3. Flexible connections are by others (the Contractor), all other manufacturers provided the flexible connection.

Based on the exclusions, EDI and OTT (both options) were ranked lower than the other manufactures, as summarized in *Table 14*.

Table 14 – Completion of Supply

	Aquarius	EDI	OTT1	OTT2	SSI1	SSI2
Completion of Supply Score	**5**	**2**	**2**	**2**	**5**	**5**

Installation Requirements (Weight = 3):

The proposals were ranked based on the requirements to install the proposed diffuser equipment within the existing aeration basins. All manufacturers, provided designs that can be easily inserted into the existing basins.

The evaluation of the installation requirements also considers the design and layout of the diffuser systems, the quantity of installed diffusers, as well as the design of the retrievable system, as summarized in *Table 15*. OTT has by far the highest number of grids (64 & 58), which requires the most process connections, and will require a significant amount of field welding at the connections to all the grids. Aquarius has a small number of grids, but a high number of diffusers compared to the diffuser arm systems.
Aquarius and Sanitaire provided lifting systems with rigid components, whereas EDI and OTT provided systems using a stainless steel wire lifting harnesses. No preference was given to rigid vs flexible lifting systems, because each system is adequate. However, manufactures requiring a lifting crossbeam were scored slightly lower. The lifting crossbeam distributes the load from the diffuser grid to the crane and increases the number of connections between the grids and the crane.

Table 15 –Diffuser Assemblies Installation

	Aquarius	EDI	OTT 1	OTT 2	SSI 1	SSI 2
Number of Removable Grids	32	38	64	58	36	36
Number of Diffusers	6,160	2,080	1,408 (sets)	1,276 (sets)	812 Sets	812 Sets
Grid Weight (lbs)	5,800	3,810	1,250	1,250	850	850
Equipment by Others (Y/N)	N	Y	Y	Y	N	N
Score	**4**	**2**	**2**	**2**	**5.5**	**5.5**

Based on the proposed layouts, SSI received the highest scores due to the low number of grids and diffusers, and the low weight per grid. Aquarius was scored second highest because they have the lowest number of grids, and have no equipment that is supplied by others. OTT (both options) and EDI were scored the lowest; OTT because of the high number of grids, and EDI because of the significant amount of equipment by others (i.e. concrete ballast beams and spreader bar).

Delivery Schedule (Weight = 3):

Delivery schedule was based on two durations provided in the proposals: fabrication schedule and delivery schedule. Fabrication schedule is the time needed to finalize the submittals and manufacture the system. The delivery schedule includes the duration of the delivery from the place of manufacturing to the jobsite. The results from the proposals are summarized in *Table 16*. EDI had the quickest delivery schedule by a pretty wide margin, and was thus scored the highest. The other manufacturers were all score the same because their schedules were within 1 week, and showed a variance of 2 or more weeks.

Table 16 – Fabrication and Delivery Schedules

Delivery Schedule	Aquarius	EDI	OTT 1	OTT 2	SSI 1	SSI 2
Fabrication Schedule	12-14	1	8-10	8-10	8-16	8-16
Delivery Schedule	1	8	4	4	1	1
Total Delivery Time from Approved Submittal	14	9	13	13	13	13
Score	**1**	**6**	**3**	**3**	**3**	**3**

Performance Bond (Weight = y/n):

The proposals were ranked on willingness to agree to the Performance Bond provided by PACE ensuring the procurement of supplies and services on the basis of direct labor hours at specified fixed hourly rates and material at cost. All manufacturers agreed to a performance bond.

Supply Bond (Weight = y/n):

The proposals were ranked on willingness to agree to the Supply Bond provided by PACE. The Supply Bond guarantees the manufacturer will supply all equipment and materials as contracted. Should the manufacturer default, the Surety will compensate the contractor for costs and damages incurred. The provided Supply Bond can be seen in the attachments (Exhibit A). All manufacturers, provided a statement that a Supply Bond would be furnished, provided the contract was awarded to them.

Attachments

A. Equipment Summary Sheet (Exhibit C, All Manufacturers)
B. LCC Calculations
C. Original RFP
D. Aquarius Technologies, Inc. abbreviated proposal
E. Environmental Dynamics International abbreviated proposal
F. OTT abbreviated proposal (Option 1 & 2)
G. SSI abbreviated proposal (Base Bid)
H. SSI abbreviated proposal (Alternate Bid)
I. Reference Questionnaires

December 4, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Rancho Las Virgenes Composting Facility: Biofilter Maintenance

SUMMARY:

The biofilters at the Rancho Las Virgenes Composting Facility require periodic replacement of the wood chip media to meet air quality permit requirements. Biofiltration uses the wood chip media as a substrate for organisms, which remove ammonia and volatile organic compounds from the foul air generated by the composting process. The media breaks down over time and needs to be replaced.

On October 4, 2017, a request for quotations for the supply of biofilter media was placed on the LVMWD website. No quotations were received by the due date, so staff contacted Viramontes Express, the firm that has previously supplied the media. A quotation, in the amount of $84,204.80, was received for supply of new biofilter media and removal of the spent media.

RECOMMENDATION(S):

Authorize the Administering Agent/General Manager to issue a purchase order to Viramontes Express, in the amount of $84,204.80, for the supply of new biofilter media and the removal and disposal of the spent media.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

Sufficient funds are available in the adopted Fiscal Year 2017-18 JPA Budget for this work. No additional appropriation is required.

Prepared by: Brett Dingman, Water Reclamation Manager

December 4, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Tapia Water Reclamation Facility Fiscal Year 2017-18 Rehabilitation Project: Award of Design Contract

SUMMARY:

A request for proposals (RFP) for design of the Tapia Water Reclamation Facility (Tapia) Fiscal Year 2017-18 Rehabilitation Project was released on October 9, 2017. The scope includes a compilation of the work planned through three budgeted capital improvement projects including replacing deteriorated grit and skimmings piping, replacing slide gates for Channel No. 4 of the secondary sedimentation basins and rehabilitating Primary Clarifier Nos. 4 and 5.

On July 27, 2017, the Administering Agent/General Manager approved a professional services agreement with CSI Services Inc., in the amount of $4,995, to perform an inspection of Primary Clarifier Nos. 4 and 5, document the conditions and assist with developing the scope of the rehabilitation work. The inspection report was included as an appendix to the RFP for design. On November 1, 2017, four proposals were received; staff recommends the Board accept the proposal from Cannon for the project.

RECOMMENDATION(S):

Accept the proposal from Cannon, and authorize the Administering Agent/General Manager to execute a professional services agreement, in the amount of $55,404, for engineering design and design support during construction for the Tapia Water Reclamation Facility Fiscal Year 2017-18 Rehabilitation Project.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

Sufficient funds are available in the adopted Fiscal Year 2017-18 JPA Budget. No additional appropriation is required. The cost of the project will be allocated 70.6% to LVMWD and 29.4% to Triunfo Sanitation District.

DISCUSSION:

The Tapia Water Reclamation Facility Fiscal Year 2017-18 Rehabilitation Project involves replacement or rehabilitation of equipment in three different areas of Tapia: (1) rehabilitation of Primary Clarifier Nos. 4 and 5, (2) replacement of grit and skimmings piping, and (3) replacement of slide gates for Channel No. 4 of the secondary sedimentation basin. These three work items were originally planned and budgeted as three separate capital improvement projects; however, staff recommended the work be combined into one project to provide a cost savings on design, bidding and construction. In addition, the work will require carefully phased construction between the three work areas to avoid impacting treatment operations. By having one contractor complete all of the work, staff can better control and specify the phasing of work.

The first work item incorporated into the project is the rehabilitation of Primary Clarifier Nos. 4 and 5. Primary sedimentation at Tapia is accomplished using five concrete, rectangular sedimentation tanks that are approximately 125 feet long, 20 feet wide, and 12 feet deep. Over time, the concrete in and around the primary clarifiers vapor space (the upper +/- 3 feet) has deteriorated due to exposure to gas from the influent wastewater. Concrete spalling has been observed in several places on the clarifier deck, and inspection of the tank interior revealed locations of weakened concrete. To date, the rehabilitation work has occurred in phases to accommodate normal wastewater treatment operations. The first phase involved the rehabilitation of Primary Clarifier No. 1 in November 2014. The second phase was the rehabilitation of Primary Clarifier Nos. 2 and 3 in February 2017. The proposed project would complete the third and final phase, which would rehabilitate Primary Clarifier Nos. 4 and 5. Phasing the rehabilitation work has allowed for lessons learned to be incorporated into the design to streamline construction and reduce the potential for change orders.

The second work item incorporated into the project is the rehabilitation of the grit and skimmings piping. Grit and skimmings piping, both from the headworks' grit channels and the primary sedimentation basins, has exceeded its useful service life and requires replacement. The existing piping is above-ground, secured on adjacent concrete walls and structures, ranges in size from 4 to 8 inches and is constructed primarily of glass fused steel. Repeated repairs have been required due to the age and condition of the pipe.

The third work item incorporated into the project is the rehabilitation of the secondary effluent slide gates for Channel No. 4. The gates return the activated sludge from the secondary sedimentation basins to the reaeration basins and then to the return activated sludge pumps. Hydraulic head pushes the sludge into Channel No. 4 through two pipes in each secondary effluent gate (one mounted inside and one outside). The gates are constructed of aluminum and bolted to aluminum boxes, which are supported by a bracket system attached to the walls of the channel. The gates control the flow of the sludge from the secondary sedimentation basins into Channel No. 4. Due to the corrosive environment, the aluminum gates and boxes have deteriorated and require replacement.

On November 1, 2017, the following four proposals were received:

Design Firm	Fee Proposal	Total Hours
HDR	$129,904	719
PACE	$66,705	492
CANNON	$55,404	326
KEH	$132,824	796

Upon review of the proposals, staff determined that the Cannon team provided the best value when considering cost among other factors. HDR and KEH both provided sufficient proposals to complete the design; however, both consultants' proposals included significantly more design hours than Cannon and PACE, increasing the overall cost substantially. Additional costs were attributed to items such as a preliminary design report, 50% submittal and subconsultants, which were not required by the RFP. Although these additions could add value to the project, staff believes the nature of the work does not warrant the significant added cost.

In an effort to reduce the design cost and time required, staff circulated the RFP with attachments including similar plans and specifications from closely related projects. This project entails mostly maintenance type work (removal and replacement), which understandably requires less design time than new construction.

Cannon has successfully worked with staff on several projects, including both the Jed Smith Pipeline Replacement Project and the interconnection project with Calleguas Municipal Water District Project. Overall, staff has been very satisfied with Cannon's performance and work products.

GOALS:

Construct, Manage and Maintain All Facilities and Provide Services to Assure System Reliability and Environmental Compatibility

Prepared by: Coleman Olinger, P.E., Associate Engineer

ATTACHMENTS:

Cannon Proposal

Las Virgenes Municipal Water District

Request for Proposals for Tapia Rehabilitation FY 17-18 Design and Support During Construction

Cannon

Reliable Responsive Solutions

November 1, 2017

Coleman Olinger
Las Virgenes Municipal Water District
4232 Las Virgenes Road
Calabasas, CA 91302

Subject: **Tapia Rehabilitation FY 17-18**

Dear Mr. Olinger:

The Joint Powers Authority (JPA) of Las Virgenes Municipal Water District and Triunfo Sanitation District realize the importance of predictive and preventative maintenance to extend the useful life of its facilities. Planned repair and replacement of existing infrastructure allows for well-thought-out and safe construction activities in contrast to performing work in an emergency repair situation.

Critical upgrades for Fiscal Year (FY) 2017-2018 include the repair, rehabilitation, and coating of primary sedimentation basins 4 and 5, the removal and replacement of a portion of the existing skimmings and primary sludge piping, the installation of new redundant grit solids feed piping, and the removal and replacement of 10 existing sluice gates and custom boxes in channel 4.

During the past 41 years, Cannon has provided engineering, design, survey, construction management, and landscape architecture services for multiple projects including wastewater system/facility infrastructure improvements throughout Southern California. Due to previous work with Las Virgenes Municipal Water District (District), our team members have a singular understanding of this current project's background and location, and bring valuable experience with the District's unique contract documents, standard details, policies, and procedures that would allow for the seamless coordination of engineering services with the District.

As Cannon's proposed Project Manager, Amando Garza brings direct experience working with numerous California municipalities on many previous wastewater infrastructure projects. In addition, Cannon has completed other projects similar in nature to the Tapia Rehabilitation Project, including wastewater treatment plant expansions for the Cities of McFarland and Delano, and the design for the rehabilitation of the Buena Vista Aquatic Recreation Area wastewater treatment plant in Kern County.

We are confident that our experience with these and other projects as well as our history working together on previous water infrastructure design, survey, and construction projects will improve the constructability of the District's current project. Cannon has organized a comprehensive professional team to efficiently and reliably complete the scope of work outlined in the Request for Proposals.

Cannon has the staff, resume, and references to provide quality engineering and design services to the District, and is excited to aid in the successful completion of the Tapia Rehabilitation FY 17-18 Project. The following proposal demonstrates our experience and proposes a project team of key personnel we feel will best meet your needs.

I am available to answer any questions through the contact methods provided below, or to further discuss this proposal.

Sincerely,

Gary Roepke, PE C48693
Senior Principal Civil Engineer
11900 West Olympic Boulevard, Los Angeles, CA 90064
T 310.382.5129 **F** 310.664.8877 GaryR@CannonCorp.us

Firm Profile

Cannon Corporation — Reliable Responsive Solutions Since 1976

As a full-service engineering, surveying, landscape architecture, and construction management firm, we take pride in our ability to offer clients a broad range of services. Our commitment to providing clients Reliable Responsive Solutions, whether the project scope is expansive or more specialized, spans 40 years. During that time, we have worked with many districts, cities, counties, and agencies throughout California to maintain secure and dependable water and wastewater systems, make streets safer and more pedestrian and bicycle-friendly, and construct buildings and facilities that are structurally sound.

These characteristics have been an integral part of the many water resource improvement projects we have completed throughout California. This experience gives us tremendous insight on the services required to accurately assess infrastructure upgrades for the Las Virgenes Municipal Water District's Tapia Rehabilitation FY 17-18 Project.

From our four office locations in Los Angeles, Ontario, San Luis Obispo, and Bakersfield, Cannon's team of more than 100 professionals are available to begin work for the District immediately.

In addition to our project team members, Cannon is able to provide the following resources to the District:

- Registered Civil, Electrical, Structural, and Mechanical Engineers
- Licensed Land Surveyors and Survey Technicians
- Licensed Landscape Architects
- Caltrans Certified Construction Managers, Inspectors, and Resident Engineers
- Qualified Stormwater Practitioners and Developers (QSP/QSD)

Project Manager
Amando Garza, PE
1050 Southwood Drive, San Luis Obispo, CA 93401
☎ 661.616.6219 ✉ AmandoG@CannonCorp.us
661.319.1678 CannonCorp.us

Principal-in-Charge
Gary Roepke, PE
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Experience Counts

Our team offers expertise in the following areas relevant to your project:

Process Piping Replacement

Wastewater Treatment

Concrete Repair and Coatings

Design and CM Services

Descriptions of our projects which incorporated these services is included in Section 3.

Throughout our experience working with Cannon and Mr. Garza, we have found them to be reliable and responsive. They have continued to meet our expectations, project budgets, and dealines providing services related to the planning, design, and construction phases of our City's wastewater facilities.

- John Wooner, City Manager & Dennis McNamara, City Planner, City of McFarland

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Work Plan

Project Understanding and Approach

The Joint Powers Authority (JPA) of Las Virgenes Municipal Water District and Triunfo Sanitation District realize the importance of predictive and preventative maintenance to extend the useful life of its facilities. Planned repair and replacement of existing infrastructure allows for well-thought-out and safe construction activities in contrast to performing work in an emergency repair situation. For Fiscal Year 17-18, the JPA has established the following reliability and redundancy upgrades for this year's program as described below and illustrated in Exhibit 1 on the following page.

- Repair, rehabilitation, and coating of Primary Sedimentation Basins 4 and 5.
- Removal and replacement of existing skimmings and primary sludge piping from the primary sedimentation basins skimming trough to the "Muffin Monster" comminutors.
- Installation of new redundant grit solids feed piping from the grit pump dry-well to the northeast end of the existing cyclone feed header.
- Removal and replacement of 10 existing "Hydro-Gate" sluice gates and custom boxes in channel 4 (effluent channel from secondary clarifiers).

Goals -

✓ Replace aging infrastructure and extend the useful life of primary sedimentation basins 4 and 5; the skimmings and raw primary sludge pipeline; and channel 4 sluice gates.

✓ Provide redundancy to the grit solids feed line.

✓ Improve Water Reclamation Facility (WRF) reliability.

✓ Minimize disruptions to WRF plant operations.

✓ Incorporate operations and maintenance staff's protocols for contractors working within an active plant.

✓ Use existing as-builts, reports, and photos to minimize costs for design and construction documents.

✓ Develop technical specifications that require high performance of coating equipment used for on-site applications.

Strategies -

✓ Verify extents of concrete repair, coatings, and rehabilitation at onset of project.

✓ Close coordination and meetings with operations and maintenance staff to fully understand the extents of desired rehabilitation and how best to phase, coordinate, and schedule work within the plant.

✓ Evaluate pipe material alternatives based on staff preference, cost, longevity, durability, and manufacturer recommendations.

✓ Develop construction phasing to maximize use of existing isolation valving and minimize bypass pumping.

✓ Develop detailed performance specifications for coatings and require samples to be prepared on-site with proposed equipment prior to full mobilization into work areas.

Primary sludge piping gallery at in-line grinder and pumping station.

ADD GRIT SOLIDS REDUNDANT PIPE
TO EXISTING HEADER

REMOVE AND REPLACE CHANNEL 4
SLUICE GATES & BOXES

MALIBU CANYON ROAD

TAPIA WATER RECLAMATION FACILITY

REHAB PRIMARY SEDIMENTATION
BASINS 4 AND 5

REMOVE AND REPLACE SKIMMINGS
AND PRIMARY SLUDGE PIPING

N

N.T.S.

TAPIA WRF REHABILITATION PROJECT FY 17-18

EXHIBIT 1

Cannon

1050 Southwood Drive
San Luis Obispo, CA 93401
P 805.544.7407 F 805.544.3863

Key Considerations

We have evaluated the RFP, visited and walked the project site, reviewed as-built drawings, studied CSI's report, and discussed goals for the project with District staff. Based on this research, we have identified the following key elements for a successful rehabilitation project:

1 Coating Specialists

Knowledge and experience in the design, construction, and sequencing of the rehabilitation and upgrade of wastewater treatment systems, as well as the overall construction work are critical prerequisites for the team responsible for preparing efficient and effective project implementation documents. A detailed understanding of current Society for Protective Coating (a.k.a. SSPC, Steel Structures Painting Council) and National Association of Corrosion Engineers (NACE) requirements for the painting and coating systems are also critical to the successful execution on of this project. We will work closely with CSI to incorporate their input and feedback throughout the design development process. We have successfully worked with CSI on several recent projects.

2 WWTP Expertise

Many factors have the potential to affect implementation of these upgrades including seasonal flow variations; treatment process upsets; and the need to bypass around zero-redundant facilities. Our multidisciplinary team of professionals, led by Mr. Garza, has successfully worked together on numerous similar rehabilitation and upgrade projects. We will assess the challenges and nuances of the Tapia WRF and incorporate requirements into the design to provide clear, concise, correct, and complete construction documents.

3 Design Development

Understanding the District's goals and discussing them with the WRF operations and maintenance team at the onset of the project will allow us to develop a clear vision for the project. Topics will include design life, material type, ongoing treatment plant operations, system valving and isolation, construction phasing, long-term operations and maintenance, access, budget, and schedule. Having these discussions and making decisions early in the process will help deliver the project on time and within budget.

4 Bid Documents

There are many different methods for securing cost numbers from prospective bidders/contractors such as lump sum, and itemized unit costs. We will work closely with District staff to incorporate lessons learned from the two previous projects along with our unique experience on other similar projects. The goal of this effort will be to develop bid documents that are clear to bid and straightforward to administer during construction.

Reducing Change Orders

The more thorough and clear the construction documents, the less likely the District will receive unexpected change orders. One strategy we've found helpful is to involve contractors in the process. By providing selected contractors with plans and specifications at the submittals, we can receive and incorporate review comments into the construction documents and dramatically reduce change order requests. We further refine the contract documents by soliciting feedback from the operations and maintenance staff of the District.

We have documented this process and feedback from previous projects with neighboring agencies in what we call our "Lessons Learned Memorandums." In addition, we have a documented process for tracking change orders during construction. Cannon adheres to strict document control guidelines, which we believe is a valuable practice for any project – construction related or not. When a project begins, we implement a standard file system which includes folders for correspondence, contract administration, contractor submittals, daily reports and site images, RFI's, schedule of values, substantial completion, and close out.

In addition to these standard file folders, we follow a file naming convention to ensure quick retrieval of documents. This file system is available in each Cannon office and to our Project Managers, Project Engineers, and Construction Observers working in the field. These document control guidelines prove invaluable when assisting with claims management, unresolved change orders or identifying refinements to plans and/or specifications for future projects.

Scope of Work

We will provide the lead engineering services for plans and specifications for the replacement of the grit and skimmings piping and channel 4 slide gates (10 count). In addition, we will use past project information and the recent field investigation reports (by CSI) to assess the existing condition of primary clarifier tanks 4 and 5. The recommend scope for rehabilitation project and engineering services through bidding and construction duration are summarized below:

Our services will include the following tasks:

- Provide project management efforts throughout all phases of the project.
- Prepare the plans and specifications for the replacement of the grit and skimmings piping and 10 channel 4 slide gates. Replacement of the grit and skimmings piping will include modifications to the existing alignment/layout to improve operational efficiency. The District will provide input on preferred alignment.
- Evaluate past project information and recent field investigation report (completed by CSI Services, Inc.) to determine what must be repaired or replaced within primary clarifier tanks 4 and 5 including concrete, joint sealant, rebar, diffusers, launders, beams and any other mechanical equipment. Additional field testing and/or material sampling are not anticipated to be required for design.
- Provide detailed design including materials selection for the selected rehabilitations.
- Perform constructability and QA/QC review of design, quantities, and methods of measurement and payment for construction.
- Provide engineer stamped plans and specifications that are ready to bid.
- Provide Engineer's Estimate.
- Perform bidding assistance in answering any requests for information (RFI) and attending the pre-bid meeting.
- Provide engineering services during construction including attendance at one pre-construction meeting, five bi-weekly meetings, three site visits, and one punchlist walk-through.
- Create record drawings in AutoCAD, as well as one set on Mylar based on redlines provided by contractor.

Project management efforts will include a project kick-off meeting, review meetings with District staff on the 90 percent and final design deliverables.

Design Phase Work -

Our services will include the following tasks:

- Prepare and stamp final plans.
- Prepare and stamp final specifications. The owner will provide the front end of the specifications.
- Prepare Engineer's Estimate for 90 percent and final plans.
- Provide construction phasing plan to keep system operational while work is completed.

Bidding Phase Work -

Our services will include the following tasks:

- Review and respond to bidder RFI's.
- Attend Pre-Bid Meeting.

Construction Phase Work-

Our services will include the following tasks:

- Attend the pre-construction meeting with District staff and construction contractor.
- Review contractor submittals with one re-review on each.
- Respond to RFI's.
- Prepare project record drawing based on contractor's red-line markups.
- Attend three site visits and three contractor meetings.

Deliverables -

We will provide the following deliverables:

- 90% plans for district review/comment
- Final Plans
- Final Specifications
- Record Drawings
- Engineer's Estimate
- Construction Events Timeline

The District will provide AutoCAD drawings/plans from previous projects to aid design.

Quality Assurance/Quality Control Program

With your project's main objectives in mind, our Program Manager will implement Cannon's Quality Assurance/Quality Control Program. Cannon has earned a strong reputation for product delivery and professional service. We have built and continue to develop a comprehensive internal control process to provide the highest level of quality to save our clients time and money.

This process incorporates peer review and progress reporting to better meet our clients' desires for project design, costs, and schedule milestones. These processes are integral to our way of doing business, allowing us to establish and maintain schedules and budgets, develop cost saving strategies, and sustain our commitment to quality.

These processes include a **Work Product Review Program** (the most significant element of our QA/QC for the design process), Project "Look Backs" to capture and share lessons learned, Earned Value Analysis (EVA) program to manage deliverable completion and value, and Project Progress Reviews which use our project management software.

We know we have done it right when we get a set of plans back without a single redline, when a project is constructed with low number of RFIs, and when we get positive feedback from our clients.

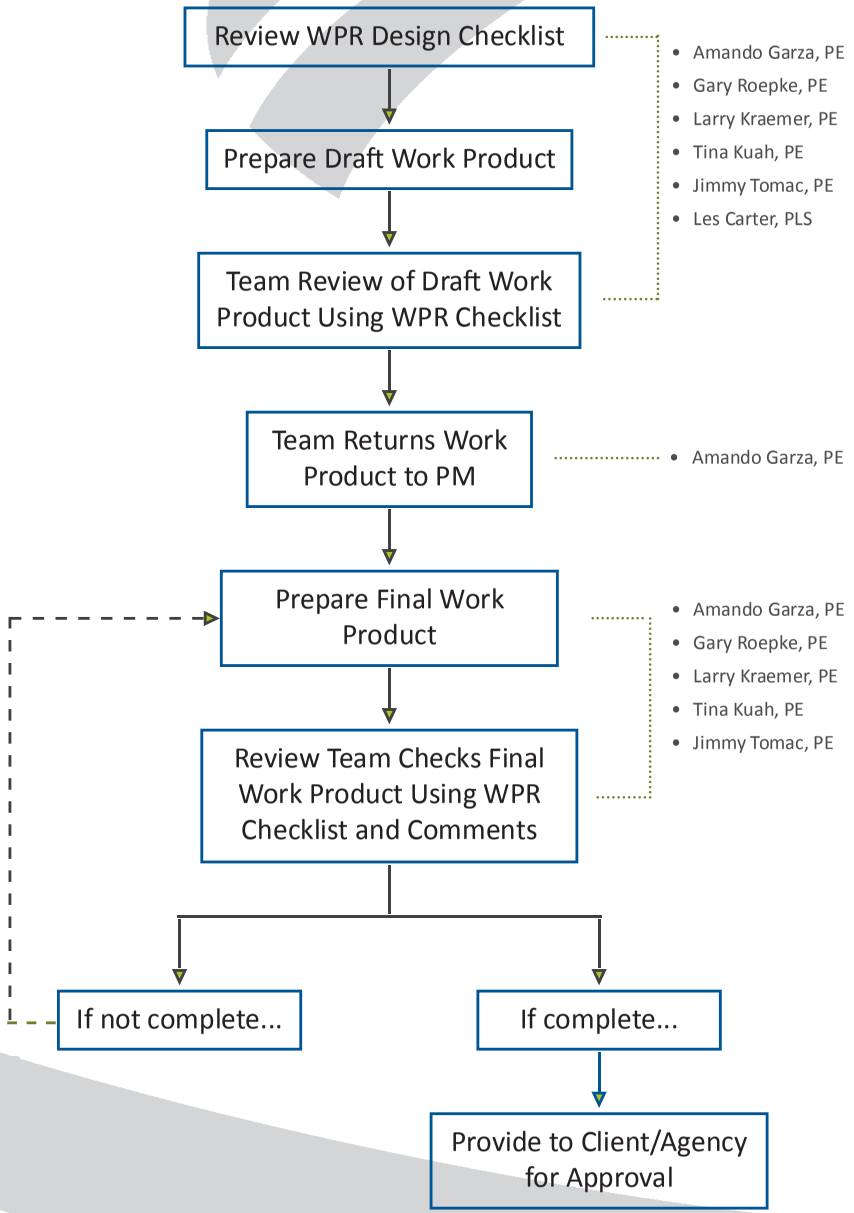
In addition, we employ cost savings strategies that have been effective in managing projects for public and private industry clients. These strategies may include: cost benefit analysis and value engineering reviews; and alternative technologies review or innovative approach analysis.

Our work flow incorporates Quality Review processes to ensure compliance with standards and that our engineering services are accurate, efficient, and fully meet our clients' expectations. We place key emphasis on "Getting it Right the First Time."

Earned Value Analysis (EVA)

Our EVA program is a method for managing projects based on the regular comparison of actual project costs to planned costs and to completed work. The phrase "earned value" comes from the concept that when a deliverable is completed, its value has been earned. Steps of this analysis include identifying each deliverable, developing a schedule for deliverable completion, and assigning a value to each deliverable.

Overview of Cannon's QA/QC Program



Team Qualifications

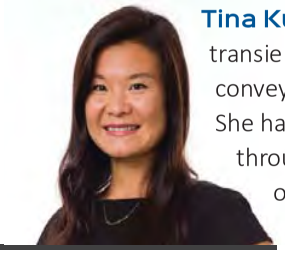
Key Personnel and Organizational Chart

Amando Garza, PE has more than 25 years of professional experience with an extensive background in wastewater process engineering and a thorough knowledge of wastewater treatment plant (WWTP) planning design and construction administration as well as design of lift stations and odor control facilities.

He has managed the successful completion of many headworks design projects that have included bar screens and washer compactors upgrades. His headworks and screenings handling experience ranges in size from 0.3 mgd to 32 mgd, including a 8 mgd headworks for the City of Delano that included a complete headworks upgrade.

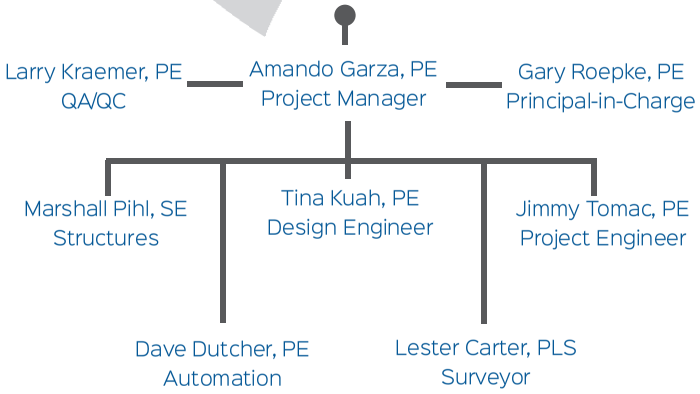
For the majority of his more than 40 years as a Civil Engineer, **Gary Roepke, PE** has designed and managed projects for wastewater and water systems across Southern California. He provides oversight on projects for wastewater collection and pumping systems; site development; supply, transmission, and distribution systems; and construction administration and inspection.

Larry Kraemer, PE brings 30+ years of experience in civil engineering planning, design, and construction management for infrastructure projects. He has served in various capacities for Caltrans, Orange County Water District, and Orange County Sanitation District on complex water resources systems, and for the past 10 years as Director of Cannon's Public Infrastructure Division, where he leads the Division's daily oversight of design teams, project and construction management, planning, and contract administration.



Tina Kuah, PE brings 11 years of experience in performing transient surge and hydraulic analyses for pressurized water conveyance systems including potable, recycled, raw, and sewer. She has worked with numerous agencies and municipalities throughout California, including the Los Angeles Department of Water and Power and the County/City of San Francisco Department of Public Works.

Jimmy Tomac, PE has served as project engineer on public infrastructure projects for 10 years, including the design of headworks facilities for Laguna County Sanitation District and the City of McFarland. He is responsible for site grading, utility plan and profiles, curb ramp design, drainage reports, hydraulic analyses, cost estimates, and specifications. Mr. Tomac previously worked for the Regional Water Quality Control Board and Coastal Resource Conservation District.



Amando Garza, PE Project Manager

Professional Registration

- Registered Civil Engineer, California, No. 54148

Education

- Master of Science, Civil Engineering, University of California, Los Angeles, California
- Bachelor of Science, Civil Engineering, California State University, Fresno, California

Professional Affiliations

- California Water Environment Association
- Water Environment Federation

Mr. Garza has served as the Lost Hills Utility District Engineer since 1998 and currently serves as the Municipal Wastewater Engineer for the City of McFarland. With 23 years of water and wastewater design and construction experience, he has completed numerous facilities plans, operations manuals, revenue programs, and recycled water/reuse projects. He also has extensive experience in design, resident engineering, construction management, grant and funding administration, and environmental compliance.

Headwork Design and Construction Management, McFarland, California: As Project Manager, Mr. Garza oversaw this first phase of the wastewater treatment plant's expansion. The design of the new headworks included a Parshall flume, a mechanical bar screen and manual bar screen, and submersible influent pump station. The headworks structure was designed with two parallel channels to accommodate long-term anticipated peak flows. A single mechanical bar screen and washer compactor were installed to treat a short-term design peak flow of approximately 4.0 mgd (2036). The second screenings channel was equipped with a manual bar screen, which will be used to bypass flow if the mechanical bar screen is out of service.

Wastewater Treatment Plant and Related Improvements Expansion, Delano, California: Mr. Garza served as Project Manager for design of the City's WWTP expansion, which took the facility from 4.0 mgd to 8.0 mgd. The expansion touched nearly every aspect of the City's facility and included the addition of a new extended aeration-activated sludge process to the existing trickling filters. This project was completed prior to Mr. Garza working with Cannon.

Wastewater Treatment Plant Rehabilitation, Kern County, California: Cannon completed the design for the rehabilitation of the Buena Vista Aquatic Recreation Area (BVARA) wastewater treatment plant (WWTP) in Kern County (County). As Project Manager, Mr. Garza oversaw the screenings evaluation and design of a new screening facility. The system is an auger type in-channel inclined screen with a perforated "basket" whereby the screening material is trapped and removed with a shaftless spiral screw auger with brush. The inclined screenings basket consists of ¼-inch perforated holes where screenings are trapped and fluid continues through all the available holes.

Phase 1 Plant Upgrade, Santa Maria, California: Mr. Garza assisted on a project to complete the planning and design efforts for the Laguna County Sanitation District (LCSD) Phase 1 wastewater treatment plant upgrade. Phase 1 plant upgrades consisted of designing a new headworks facility and activated sludge process for replacement of the existing Trickling Filter wastewater process. Cannon was responsible for process flow diagram development, electrical engineering, process engineering and structural engineering on this headworks.

Wastewater Treatment Plant 3 Headworks Upgrade, Bakersfield, California: Mr. Garza served as Project Manager for a major rehabilitation of the City's existing headworks. The project included replacement of the two existing mechanical bar screens with new heavy duty climber-type bar screens. A dedicated screenings washer compactor was also installed behind each screen. This project was completed prior to Mr. Garza working with Cannon.

Gary Roepke, PE Principal-in-Charge

Professional Registration

- Registered Civil Engineer, California, No. 48693

Education

- Bachelor of Science, Civil Engineering, Iowa State University, Ames, Iowa

Professional Affiliations

- American Water Works Association (AWWA)
- American Public Works Association (APWA)
- Association of Water Agencies of Ventura County (AWA)
- Southern California Water Utilities Association (SCWUA)

Mr. Roepke brings more than 40 years of experience in engineering and design for water resources. He has been the project manager for municipal, industrial, commercial, and military facility projects involving wastewater collection and pumping systems; water treatment, water supply, transmission, and distribution systems; drainage and flood control systems; and recycled water systems. In addition, Mr. Roepke provides construction administration, inspection, and start-up services such as master planning, preparation of reports, and studies for both new construction and upgrades to existing facilities.

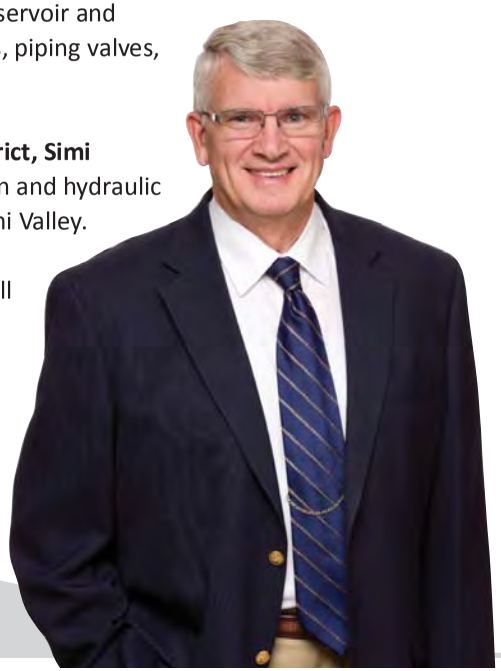
5.0-MG Reservoir, Ventura County Waterworks District No. 8, City of Simi Valley, California: Mr. Roepke served as Project Manager and Lead Engineer for the establishment of a 5.0-MG reservoir, including grading, drainage, access road, inlet/outlet line, electrical, and controls.

Q Street Sewer Rehabilitation, City of Bakersfield, California: Mr. Roepke served as Project Manager and Lead Engineer for the assessment of the 33-inch Q Street trunk sewer. Services included coordinating all field efforts for the cleaning and video logging of the line condition, preparation of report of findings and recommended remedies, preparation of a repair report, and outlining of additional items for consideration, including an FOG reduction plan for the line. Following CCTV inspection, assessment, and recommendations for rehabilitation, a PS&E was prepared for construction of a cured-in-place-pipe (CIPP) liner for approximately 3,850 linear feet of existing 33-inch RCP sewer. Design services included preparation of sewer rehabilitation specifications, traffic control plans, a sewage bypass system, and procurement of Caltrans encroachment permit for trenching bypass piping.

Reagan Presidential Library 1.5-MG Reservoir, Ventura County Waterworks District No. 6, City of Simi Valley, California: Mr. Roepke served as Project Manager and Lead Engineer for the establishment of a 1.5-MG reservoir and upgrade to the Presidential Library booster pump station, including new pumps and motors, piping valves, electrical, and controls.

Water System Master Plan, Big Sky Ranch (2,680 acres), Ventura County Waterworks District, Simi Valley, California: Mr. Roepke provided Project Management for a water system master plan and hydraulic modeling completed for the 730-unit residential development in the western portion of Simi Valley. The master plan included determining the zone boundaries for three pressure zones; sizing the tanks, pump stations, and water mains for all zones; and determining the pressure for all flow conditions, including fire flow, for each lot.

EPA Funded Discharge Lagoon Project, Hospers, Iowa: Mr. Roepke served as Project Manager and Lead Engineer for the modification of an existing two-cell lagoon system to a three-cell controlled discharge lagoon system, with two continuous discharge aeration cells added upstream from the final three holding cells. A subsequent project added an anaerobic lagoon with a methane gas collecting cover. The anaerobic lagoon was established to treat the wastewater from a cattle slaughter and packing facility with the final effluent of this anaerobic lagoon going to the aeration cells. The project included a sanitary sewer and lift station with emergency generator and force main.



Larry Kraemer, PE QA/QC

Professional Registration

- Registered Civil Engineer, California, No. 44813

Education

- Master of Science, Civil Engineering, Water Resources, California State University, Long Beach, California
- Bachelor of Science, Agricultural Engineering, California Polytechnic State University, San Luis Obispo, California
- Certified Master Modeler in Haestad Methods, WaterCad, StormCad, Pondpack software

Professional Affiliations

- American Waterworks Association
- American Public Works Association
- Water Environment Federation
- California Water Environment Association
- WateReuse

Since 1986, Mr. Kraemer has developed extensive civil and environmental engineering experience within the public sector. He has served as a senior engineer for complex engineering projects dealing with wastewater and water resources. As Director of Cannon's Public Infrastructure division, his duties and responsibilities include the technical oversight of design, construction, and master planning projects, construction contract administration and management for bridges, pipelines, dams, wells, and pump stations. Mr. Kraemer is adept at managing challenging or complex projects due to his astute troubleshooting skills, keen attention to detail, and innovative approach for efficient design.

Wastewater Treatment Plant Upgrade, Guadalupe, California: Cannon provided construction management services for the City of Guadalupe's Wastewater Treatment Plant (WWTP) upgrade, which included upgrading the headworks and replacing key machinery. The $4.75 million project was designed to bring the WWTP into compliance with the RWQCB permit; prepare the City for future upgrades, such as meeting the criteria of Title 22 water re-use and recycling; and make operation and maintenance easier. Mr. Kraemer served as Principal Construction Manager.

Sludge Drying Beds, Santa Maria, California: Cannon assisted Laguna County Sanitation District with the replacement of the existing earthen (unlined and bermed) sludge drying beds as identified in the Wastewater Reclamation Plant Facilities and Financial Master Plan, 2010. The existing beds were at or near capacity and did not meet the District's goal of alleviating potential impacts to groundwater quality. The unlined beds were converted to lined beds with an appropriate return system for the bed supernatant. Mr. Kraemer served as Principal-in-Charge.

District Engineer, Santa Ynez Community Services District, Santa Ynez, California: Since 2004, Cannon has been the District Engineer for the Santa Ynez Community Services District. Mr. Kraemer has served as the Project Manager and main contact for the contract. As such, he has provided engineering planning, design, and oversight of the day-to-day technical issues that occur as part of operating a wastewater treatment plant and collection system. Additionally, Mr. Kraemer has participated in administrative details including budgeting and cost sharing, as well as coordination with the City of Solvang, the Chumash tribe, and residents of Santa Ynez.

Facility Management, Fountain Valley, California: As Senior Engineer for the Orange County Sanitation District, Mr. Kraemer provided technical oversight during development of the District's Master Plan and Capital Improvement Program. Mr. Kraemer participated in reviewing numerous facility upgrades, including an 80-MGD expansion of Air Activated Sludge plant, $15 million Solid Storage Facility expansion, and the master planning of a $250 million Groundwater Replenishment System designed to reclaim and reuse approximately 100 MGD of highly treated wastewater.

Tina Kuah, PE Design Engineer

Professional Registration

- Registered Civil Engineer, California, No. 70876

Education

- Bachelor of Science, Civil Engineering, University of California, Los Angeles, California

Professional Affiliations

- American Society of Civil Engineers
- American Water Works Association

As a Senior project engineer specializing in transient surge and hydraulic analyses for pressurized water conveyance systems, Ms. Kuah will work as part of the design team to apply her singular insight to the development of project designs and specifications. Her responsibilities include drawing review and tasks using standard engineering techniques, procedures, and criteria as well as tasks designed to develop advanced professional knowledge. She will independently evaluate, select, and apply judgment when making minor design adaptations and modifications.

West Simi Valley Water Recycling Project - Recycled Water Pump Station Upgrades, Simi Valley, California: The Ventura County Waterworks District No. 8 (District) was expanding its recycled water system to provide water to the Wood Ranch and Sunset Hill Country Clubs. We were selected to provide engineering and design services on the project, including hydraulic modeling for the upgrades. The capacity of the pump station was increased, and the upgraded pump station now pumps recycled water to a new 1.25 MG reservoir (high-water elevation of 1,035 feet above sea level) located on City-owned property near Westranch Place. The pump station design also included an emergency connection to the potable water system with an airgap between the systems. Each pump was equipped to be variable frequency drive (VFD) controlled. Ms. Kuah prepared a hydraulic model of this proposed recycled water system with Innovyze's H2ONET software. This consisted of inputting the new upgraded pump station; existing and future junctions and pipes; system demands; material type of the pipelines; new reservoir; and other pertinent appurtenances. A hydraulic (i.e. steady state) analysis was computed to verify that the system would run according to plan.

Ritter Ranch Development Pump Stations, Los Angeles County Waterworks District, Palmdale, California: Ms. Kuah performed the surge analysis on several pump stations (PS) and wells within the 2555, 2914, 2911, and 3240 Pressure Zones designed to serve the Ritter Ranch Development. The pump stations and wells that were part of the analysis were the Ave. H and 62nd St. W PS, Ave. I and 87th St. PS, Ave. L-12 and 60th St. W PS, Ave. O-12 and 25th St. W PS, ELR/25 W PS, 3380 PS, and future well fields. It was determined that surge protection in the form of surge tanks and vacuum relief valves was need to protect the zones from adverse pressure surges created by the operation of the pump stations and wells.

Glorietta Park Pump Station, Glendale Water and Power, California: The City of Glendale Water and Power's Glorietta Park Pump Station serves drinking water to the Glorietta Park and Verdugo Woodlands areas (1666 pressure zone) of Glendale. The system experienced occasional loss of pressure at a customer's home in addition to pipeline breaks in parts of the system constructed of cast iron pipe when the Glorietta Park Pump Station was in operation.

Ms. Kuah performed a pressure surge analysis to determine if pressure surges created by the pump station were the cause of the low pressure and pipeline breaks. An existing surge tank is installed at the Glorietta Park Pump Station. Several surge protection options were provided including installing additional surge tanks, a standpipe, vacuum relief valves, and a reservoir. In addition, pressure monitors were installed throughout the system to obtain detailed information about the actual pressure surges in the system.

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Jimmy Tomac, PE Project Engineer

Professional Registration

- Registered Civil Engineer, California, No. 87517

Education

- Bachelor of Science, Agricultural Engineering, California Polytechnic State University, San Luis Obispo, California

Mr. Tomac is experienced in Public Sector work, including design services for Waste Water Treatment Plants, Waterlines and Utilities, and Road and Sidewalk projects. He is proficient with Autocad Civil 3d, Hec-Ras, and XPSWMM. Mr. Tomac is responsible for tasks including Site Grading, Utility Plan & Profiles, Curb Ramp Design, Drainage Reports, Hydraulic Analysis, cost estimates and specifications. He also previously worked for the Regional Water Quality Control Board and Coastal Resource Conservation District. Performed Irrigation Evaluations for Agricultural/Municipal clients and developed reports with data analysis and recommendations for the clients.

McFarland WWTP Aeration Basins, McFarland, California: Cannon was selected to be an on-call municipal wastewater engineer for the City of McFarland for a three-year term. The services provided included water and nitrogen balances, irrigation system design, groundwater impact analysis, plans and specification preparation, collection system upgrades, facility master planning, regulatory compliance, and topographic surveys. Cannon completed a Wastewater Facilities Master Plan for the City's 20-year-growth projection. This plan included the development of a wastewater facilities integration, SCADA programming of both the wastewater plant and three collection system lift stations, and the development of a phased approach to a facility plant expansion from 1.1 mgd to 2.5 mgd., including a new aeration system with high efficiency blowers. As Design Engineer, Mr. Tomac assisted with the design of the new aeration basins. He also produced specifications, quantity take-offs and opinion of probable cost.

Sludge Drying Beds, Santa Maria, California: Cannon assisted Laguna County Sanitation District with the replacement of the existing earthen (unlined and bermed) sludge drying beds as identified in the Wastewater Reclamation Plant Facilities and Financial Master Plan, 2010. The existing beds were at or near capacity and did not meet the District's goal of alleviating potential impacts to groundwater quality. The unlined beds were converted to lined beds with an appropriate return system for the bed supernatant. Mr. Tomac designed the Concrete Lined Sludge Drying Beds and Decant Pump Station. He also provided civil sitework design including yard piping and paving and grading.

CSA 23 Intertie Project, Santa Margarita, California: As Design Engineer, Mr. Tomac provided design for the waterline, helped perform a hydraulic analysis of the system and prepared an engineer's cost estimate.

500KV Transmission Tower Access Pathway, Diablo Canyon Power Plant, Avila Beach, California: As Design Engineer, Mr. Tomac provided a design for a one-way access road. He performed grading design and earthwork calculations as well as a drainage study.

Sidewalk Infill and Crosswalk Improvement Project, Lompoc, California: The City of Lompoc has selected Cannon to provide survey and design services to prepare construction documents for ADA compliant sidewalks, curb ramps, and curb extensions (bulb-outs) at various locations within the City. Improvements also include the installation of a Rectangular Rapid Flashing Beacon (RRBF) at the curb extension of Lompoc High School. Mr. Tomac designed curb ramps and bulb outs to be ADA compliant and prepared plans for the Installation of new sidewalks and Curb Ramps. Mr. Tomac served as Design Engineer.

Marshall Pihl, SE Structures

Professional Registration

- Structural Engineer, California, No. S5101
- Civil Engineer, California, No. C61406

Education

- Bachelor of Engineering Science, Pacific Lutheran University, Tacoma, Washington
- Bachelor of Science, Civil Engineering, Columbia University, New York
- Master of Science Civil Engineering (Structural), Columbia University, New York

Professional Affiliations

- Professional Member, International Code Council

Mr. Pihl has been providing structural engineering services since 1984. He is knowledgeable in design and analysis for all types of new construction, renovations, and repair of structural damage due to water, rot, fire, and natural disaster. His experience includes design and analysis of wood, concrete, masonry, and steel structures. In addition to structural design and analysis, he has been involved in a number of projects as a structural engineering expert witness and consultant concerning various insurance claims and repairs.

Solvang WWTP, Solvang, California: Cannon provided upgrades and improvements to the existing wastewater treatment plant. The improvements included a cover over the headworks equipment and drying beds and construction of a new maintenance storage building with retaining walls integrated into the foundations. Mr. Pihl provided structural design services and coordinated with the maintenance storage building manufacturer.

McFarland WWTP, McFarland, California: Cannon has provided the design of major upgrades to the wastewater plant. Improvements included a new master plan, SCADA systems, clarifiers, blowers, dewatering systems, headworks, and an MCC building. Mr. Pihl provided structural design services related to the structural components of the project.

San Ardo Central Treatment Complex, San Ardo, California: As part of a design team, Cannon provided assistance in the development of a new facility comprising oil dehydration, gas sweetening, steam generation, vapor recovery, and oil storage plants. Cannon's site development services have included assistance in the preliminary design phase, including topographic surveying, record boundary mapping, facility layout, and earthwork balancing design. In detailed design and permitting phases, Cannon was responsible for detailed grading and drainage construction plans, site accessibility design, as well as agency compliance support which included a flood plain and drainage study, and regulatory exhibits.

The scope of services also included civil and structural detailed design as part of a complex ground infiltration system for water plant discharge. In addition to design services, Cannon provided ongoing site preparation efforts through project team coordination, exhibits, and survey staking. As Structural Engineer of Record, Mr. Pihl designed some structural components and reviewed the structural design work of staff engineers.

Earthquake Assessment Report for Pismo Water Tanks, Pismo Beach, California: The City of Pismo Beach selected Cannon to provide structural services related to seven City-owned and -maintained water tanks. The tanks varied in capacity from ½ to 1 million gallons. The purpose of this project was to assess the tanks as part of an earthquake preparedness program. Scope of work included review of inspection reports, site visits, seismic analysis, and an earthquake assessment report. Mr. Pihl provided project oversight and structural analysis.

Dave Dutcher, PE Automation

Professional Registration

- Control Systems Engineer, Oregon, 78629PE

Education

- Bachelor of Science, Engineering Science, U.S. Air Force Academy, Colorado Springs, Colorado

Professional Affiliations

- PLC Software: Allen-Bradley ControlLogix, Siemens S7, and Modicon Quantum
- HMI Software: Wonderware System Platform InTouch, FactoryTalk View ME/SE, Siemens WinCC
- Fieldbus Applications: Profibus, DeviceNet, ControlNet, and Modbus

Since 2001, Mr. Dutcher has built extensive experience in designing and commissioning complex control systems for public agencies and private industries. His experience has provided clients with innovative solutions to automated processes while striving for efficiency at all levels – from design to build to operations and ongoing maintenance/support. Mr. Dutcher has worked on projects ranging from multi-million-dollar "green-field" installations to small facility SCADA upgrades and retrofits. He has a passion for delivering elegant control system solutions that "make life easier" for clients.

Las Vegas Street Wastewater Treatment Plant, Colorado Springs, Colorado: Mr. Dutcher was responsible for a control system and SCADA software design and implementation of an upgrade to a 40-MGD plant headworks facility. He implemented a control system upgrade for the headworks controllers, including all integration, testing, and start-up requirements. Mr. Dutcher completed retrofit programming on existing Allen-Bradley PLCs while maintaining existing operations. He delivered a successful start-up with excellent client feedback. The project was completed under budget, exceeding margin expectations.

Wastewater Treatment Facility Upgrades, McFarland, California: Cannon was selected to be an on-call municipal wastewater engineer for the City of McFarland for a three-year term. While under this contract, Cannon was tasked with the development of wastewater facilities integration and SCADA programming for both the wastewater plant and three collection system lift stations. Beginning with the headworks construction, Cannon developed the backbone system for the ultimate wastewater facility's phased expansion. Mr. Dutcher provided Automation services.

LCSD Wastewater Reclamation Plant Upgrade, Santa Maria, California: Due to aging infrastructure, anticipated growth, and a desire for greater effluent disposal flexibility, the Laguna County Sanitation District (LCSD) embarked on a two-phase program to upgrade and expand its WWRP. In partnership with Carollo Engineers, Cannon was selected to provide the planning and design efforts for the (LCSD) Phase 1 wastewater treatment plant upgrade. Phase 1 plant upgrades consisted of designing a new headworks facility and activated sludge process for replacement of the existing Trickling Filter wastewater process. Mr. Dutcher provided Automation services.

CCWRD Solids Dewatering Facility, Las Vegas, Nevada: Mr. Dutcher led the control system design and implementation for a new $118 million solids dewatering facility. He integrated a new control system with the existing plant SCADA system. He produced P&IDs, specifications, and all detailed design drawings; authored control strategies for all dewatering systems; developed test procedures for system testing; and coordinated with the general contractor to complete installation and start-up of the facility. This facility is now one of the largest centrifuge dewatering facilities in the Western United States. Mr. Dutcher completed the testing, start-up, and performance testing on schedule and within budget. CCWRD Operations staff was pleased with the operation and control of the new solids building.

Lester Carter, PLS Surveyor

Professional Registration

- Registered Surveyor, California, No. 6148

Education

- Bachelor of Arts, Public Administration, California State University, San Diego, California
- Associate, Business Management, San Diego City College, San Diego, California
- Associate, Surveying, Mesa College, San Diego, California

Professional Affiliations

- California Land Surveyors Association
- American Society of Civil Engineers
- American Congress on Surveying and Mapping
- National Society of Surveyors
- Geographic and Land Information Systems

Mr. Carter's unique survey experience spans land and shoreline boundary determination, construction surveys, military installations, public infrastructure, land development projects, laser scanning and 3-D modeling, and GIS development, as well as projects involving records of survey for sectionalized land, rancho, and pueblo lot divisions. As Cannon's Director of Surveys, Mr. Carter manages the daily operations of a 19-member survey division and provides oversight and multilevel coordination between architectural and design consultants, government agencies, and construction contractors.

Lompoc Wastewater Treatment Plant Upgrade, Lompoc, California: Cannon was selected by Parsons/RCI to provide topographic and control surveying and construction staking for the project. Scope of work included establishment of horizontal and vertical control; staking and certification for rough grading; settlement monitoring of existing storage tanks and buildings; and staking and as-built certification of oxidation basins, new facilities, storage tanks, and pipelines. Mr. Carter developed the Land Survey Scope of Work and served as Project Manager for all surveying services provided by Cannon for the project.

Point Loma Wastewater Treatment Plant (PLWTP), San Diego, California: The Plant treats approximately 175 million gallons of wastewater per day generated in a 450-square-mile area by more than 2.2 million residents. The Plant is located on a 40-acre site on the west bluffs of Point Loma and has a treatment capacity of 240 mgd. As a Survey Party Chief and subsequently as Senior Land Surveyor for the City's Land Survey/Geomatics Section, Mr. Carter supervised and performed field survey for precise subsidence monitoring surveys, topographic, and as-built site and facility surveys on numerous phases of the Plant's construction and expansion. This included the Plant's new Operations and Control buildings, sedimentation tanks, outfall, pump stations, and staff offices.

Monitoring Well Relocation at Solvang WWTP, Solvang, California: The City of Solvang selected Cannon to develop a work plan for the installation of a representative groundwater monitoring well network. The work plan described existing hydrogeologic conditions and included an evaluation of optimal groundwater monitoring locations. The scope of work included preparation of property boundary exhibit, review and research of existing documentation, meetings with the Regional Water Quality Control Board (RWQCB) to discuss monitoring well plan requirements, boundary reconnaissance survey, and the development of the monitoring well plan.

130th Street Water Distribution Pipeline Design, Gardena, California: In support of Cannon's design, Golden State Water Company retained Cannon's Survey Division to conduct property boundary and street right-of-way research, and a field survey. Cannon obtained aerial photogrammetric mapping to prepare a detailed topographic base map showing project area features, including: street centerline and right-of-way, adjacent parcel and lot information, curb and gutter or edge of pavement, sewer and storm drain manholes, water valve covers, fire hydrants, catch basins, air/vac cans, telephone poles, fences and signs on or near the right-of-way and property lines, natural ground surface, existing trees and all other visible surface features and improvements.

Phase 1 Plant Upgrade

Santa Maria, California

As partners, Cannon and Carollo Engineers were selected to complete the planning and design efforts for the Laguna County Sanitation District (LCSD) Phase 1 wastewater treatment plant upgrade. Phase 1 plant upgrades consisted of designing a new headworks facility and activated sludge process for replacement of the existing Trickling Filter wastewater process. In the pursuit of replacing aging infrastructure and for design to provide denitrification, LCSD management requested the planning and design of new facilities.

Cannon's responsibility for the project included the planning and design of the plant-wide hydraulic profile calculations, yard piping layout and design, new headworks and aerated grit chamber facilities, EQ Tank and pump station (for feeding the existing UV reactors), and sludge beds. The headworks facilities includes a parshall flume for flow metering, one new bar screen with relocation of existing bar screen, a submersible wet well and submersible pump station using the Wemco Hidrostal submersible pumps. LSCD requested that we design around their existing Huber Step Screens with provisions for a larger screen.

Please see page 20 for project reference information.

The step screens have a 1/4-inch (6mm) bar space opening. The Headworks "skeleton/concrete" and header discharge have been master plan designed around the ultimate Phase 2 plant flows of 12 mgd while the Phase 1 peak hydraulic flows are 9.0 mgd. The final engineered solution is to have a "necked down" channel for the existing screen with provisions to expand and a dual channel for a larger bar screen. Cannon was responsible for process flow diagram development, electrical engineering, process engineering and structural engineering on this headworks.

The new headworks included a dual channel structure with a necked down channel to accommodate the existing screen and washer compactor, a new step screen and washer compactor. In addition to the bar screen and washer compactor, the headworks included a parshall flume for influent metering, a submersible wet well pumping station utilizing the Wemco Hidrostal recessed impeller pumps and molded intakes.

The Cannon/Carollo Team completed a 100 percent design deliverable in May 2017. LCSD is proceeding through environmental documentation prior to advertising the project for construction bids. Cannon/Carollo will continue with engineering services during construction.

BVARA Wastewater Treatment Plant Rehabilitation

Kern County, California

Cannon completed the design for the rehabilitation of the Buena Vista Aquatic Recreation Area (BVARA) wastewater treatment plant (WWTP) in Kern County (County). This project is currently in construction and will be completed by March 2017 (prior to the Easter weekend).

The wastewater treatment plant serves the camp grounds surrounding Buena Vista Lake. Wastewater from the RV campsites and restroom/shower facilities is pumped into the WWTP with lift stations and currently has no screenings equipment.

As part of the plant rehabilitation, and in an effort to minimize the solids ending up in the WWTP and effluent disposal ponds, the County requested that we provide a design for removing screenings. Following a brief screenings evaluation, Cannon completed the design of a new screening facility. The facility is a package type screenings equipment by Parkson.

The system is known as Hycor Helisieve Plus unit, and is essentially an auger type in-channel inclined screen with a perforated "basket" whereby the screening material is trapped and removed with a shaftless spiral screw auger with brush.

The inclined screenings basket consists of ¼-inch perforated holes where screenings are trapped and fluid continues through all the available holes. The entire mechanism will be manufactured of stainless steel material.

Due to the remoteness of the plant and the drastic seasonal variations in flow, the system will not include a screenings compactor. This simple screenings facility provided the County an elegant solution to their request. In addition to the bar screen addition, the project involved the replacement of 1,500 linear feet of influent force main, design of a new circular walkway, recoating of the clarifier and activated sludge tanks, and two new effluent pumps.

Cannon completed the design in April 2016.

Please see page 20 for project reference information.

Municipal Wastewater Engineer

McFarland, California

Cannon was selected to be an on-call municipal wastewater engineer for the City of McFarland (City) for a three-year term beginning in 2012; today, Cannon has been retained for an indefinite term. As the City's wastewater engineer, Cannon has completed several projects associated with the wastewater treatment plant, including irrigation pump station and pipe design, a wastewater facilities master plan, an aeration basin, blower and MCC building, and a headworks upgrade design.

The City embarked on a phased approach for converting the wastewater treatment plant from an aerated lagoon to an extended aeration activated sludge plant. The first phase of the wastewater upgrade included the design of a new headworks facility. Future work includes new clarifiers and RAS/WAS pump station, effluent pump station, and dewatering facilities (solar beds and screw press).

As part of the phased approach for re-vamping the existing plant, our proposed project team completed planning, design and construction management for the new headworks facility. The new headworks included a dual channel structure, single automated bar screen, screenings washer compactor, a wet well and submersible pump station. As a result, the headworks included a new plant SCADA system complete with 3 lift station integrations and the initial design included considerations for the master planned wastewater plant.

The headworks included an automatic bar screen with washer compactor and manual bar rack for bypass flows. The preferred screen, by the operators, was a fully automatic multi-rake bar screen. The bar rack spacing is ¼-inch opening and is manufactured by Vulcan Industries. Previously, the plant operated to "continuous link filter screens" (Aqua-Guard) which were removed. The McFarland Headworks project involved the structural, process, electrical and instrumentation engineers at Cannon.

In addition to the Bar Screen and washer compactor, the headworks included a parshall flume for influent metering, a submersible wet well pumping station using the Wemco Hidrostal recessed impeller pumps and molded intakes.

This system has been in continuous operation since May 2015.

Please see page 20 for project reference information.

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2008 Wastewater Treatment Plant Expansion

Delano, California

Amando Garza served as Project Manager for the design of an 8.8 mgd expansion of the City of Delano WWTP. The expansion touched nearly every aspect of the City's facility, and included addition of a new extended aeration activated sludge process to the existing trickling filters. In addition to significant rehabilitation of the existing headworks and digesters, the project included two new oxidation ditches, three secondary clarifiers, RAS/WAS pump station, splitter structure, effluent storage ponds, sludge storage tanks, and centrifuge facility.

Prior to the expansion, the City's headworks relied on a single mechanical bar screen to remove screenings from the influent waste stream, and wet screenings were discharged directly to a storage bin. In order to improve the reliability of the City's screening facility as well as the quality of the screenings handled by plant staff, a second climber-type screen and a dedicated screening washer compactor for each screen was designed. Screenings removed from the raw wastewater will be washed and dewatered before being discharged to a dumpster for offsite disposal.

In addition to the screening facility improvements, Mr. Garza's team designed improvements to the City's grit handling facilities with the addition of a new grit screw auger, cyclone, and classifier. To increase the capacity of the existing influent pump station, additional dry pit submersible pumps were also included in the project.

Finally, to mitigate potential hydrogen sulfide corrosion issues at the headworks, the walls of the screening channels and wet well were coated with a high solids epoxy coating.

The overall project was operational in Spring 2011. The headworks upgrades have been operational since August 2010.

Please see page 20 for project reference information.

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Mr. Garza completed this project prior to joining Cannon.

Client References and Testimonials

- Martin Wilder, Utilities Manager
  Laguna County Sanitation District
  620 West Foster Road, Santa Maria, CA 93455
  ☎ 805.739.8750 ✉ mwilder@cosbpw.net

  Project: Phase 1 Plant Upgrade

- Kim Domingo, City Engineer
  County of Kern
  1115 Truxtun Avenue, 5th Flooer, Bakersfield, CA 93301
  ☎ 661.868.3140 ✉ domingok@co.kern.ca.us

  Project: BVARA Wastewater Treatment Plant Rehabilitation

- Mario Gonzales, Public Works Director
  City of McFarland
  401 West Kern Avenue, McFarland, CA 93250
  ☎ 661.7923093 ✉ mgonzales@mcfarland.org

  Project: Municipal Wastewater Engineer

- Juan Cerda, Wastewater Superintendent
  City of Delano
  725 South Lexington Street, Delano, CA 93215
  ☎ 661.721.3350 ✉ jcerda@delano-ca.org

  Project: 2008 Wastewater Treatment Plant Expansion

> *I have been pleased with the services provided by Cannon. I've found their engineers to be extremely thorough, diligent, and knowledgeable. I'd recommend their services without hesitation.*

Spiros Lazaris, PE, Civil Engineer, City of Santa Monica

> *My experience with Cannon has been excellent. They provided proactive solutions. Their design plans were thorough with minimal change orders. They have been responsive in their communications, and diligent in delivering their work product complete and on-time.*

John Knipe, City Engineer, City of Westlake Village

> *Cannon exceeded the City's expectations. They were responsive and reliable. They provided a creative design to overcome potential obstacles while keeping the project on-time and within budget. I have been pleased with Cannon staff and would highly recommend their services.*

Ditas Esperanza, City Engineer, City of Paso Robles

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Fee Proposal

Fee Proposal for
Las Virgenes Municipal Water District Tapia Rehabilitation FY 17-18

	Principal In Charge QA/QC		Senior Principal Engineer		Project Engineer		Project Designer		Reimbursables	Total	
Hourly Rate	$216		$200		$154		$125				
Design Tasks	Hrs	Cost	Hrs	Cost	Hrs	Cost	Hrs	Cost		Hrs	Cost
Task 1 - Project Meetings and Coordination											
1A Project Kickoff Meeting with operations staff	4	$864	9	$1,800	8	$1,232			$250	21	$4,146
1B 90 Percent Design Submittal Review			9	$1,800						9	$1,800
1C Final Design Review			9	$1,800					$250	9	$2,050
Sub Total	4	$864.00	27	$5,400.00	8	$1,232.00			$500.00	39	$7,996.00
Task 2 - Plans, Specs, and Estimate											
2A 90 Percent Design (Plans)	2	$432	8	$1,600	32	$4,928	24	$3,000		66	$9,960
2B Final Design (Plans, Specs, & Estimate)	2	$432	4	$800	32	$4,928	24	$3,000		62	$9,160
2C Construction Phasing Plan			4	$800	12	$1,848				16	$2,648
2D Construction Schedule			2	$400	8	$1,232				10	$1,632
Sub Total	4	$864.00	18	$3,600.00	84	$12,936.00	48	$6,000.00		154	$23,400.00
Task 3 - Bidding Phase Work											
3A Pre-Bid Meeting			8	$1,728					$150.00	8	$1,878
3B Review and Respond to RFIs			4	$800	8	$1,232				12	$2,032
Sub Total			12	$2,528.00	8	$1,232.00			$150.00	20	$3,910.00
Task 4 - Construction Phase Work											
4A Pre-Construction Meeting			9	$1,800	5	$770			$250	14	$2,820
4B Site Visits (3 site visits and 3 contractor meetings)			12	$2,400	46	$7,084			$1,250	58	$10,734
4C Submittals			2	$400	12	$1,848				14	$2,248
4D Review and Respond to RFIs			2	$400	12	$1,848				14	$2,248
4E Prepare Record Drawings			1	$200	12	$1,848				13	$2,048
Sub Total			26	$5,200.00	87	$13,398.00			$1,500	113	$20,098
Totals	8	$1,728	83	$16,728	187	$28,798	48	$6,000	$2,150	326	$55,404

2017 Rate Schedule

Assistant Resident Engineer	$	130	- $	143
Associate Construction Engineer	$	110	- $	120
Associate Engineer	$	140	- $	175
Associate Landscape Architect	$	135	- $	145
Associate Planner	$	140	- $	150
Automation Analyst	$	100	- $	110
Automation Design Engineer	$	110	- $	120
Automation Specialist	$	135	- $	145
Automation Technician	$	95	- $	105
Business Development Associate	$	120	- $	130
CADD Tech	$	85	- $	95
CADD Manager	$	100	- $	110
Chief Planner	$	155	- $	165
Chief Surveyor	$	175	- $	195
Clerical Assistant	$	50	- $	65
Construction Admin Assistant	$	85	- $	90
Construction Coordinator	$	90	- $	110
Construction Engineer	$	165	- $	175
Construction Inspector	$	90	- $	125
Construction Manager	$	135	- $	165
Controller	$	70	- $	110
Design Engineer	$	110	- $	125
Electrical Design Engineer	$	120	- $	130
Engineer Tech	$	90	- $	100
Engineering Assistant I - II	$	70	- $	90
Expert Testimony (Deposition/Trial)	$	250	- $	450
Forensics Engineer I - III	$	230	- $	280
Forensics Office Administrator	$	150	- $	175
Forensics Research & Investigation	$	300	- $	350
Forensics Survey Tech I - III	$	230	- $	280
Forensics 2-Man Survey Crew	$	350	- $	375
GIS Specialist	$	140	- $	150
GIS Tech	$	115	- $	125
Grant Funding Manager	$	125	- $	140
I&E Construction Coordinator I - II	$	90	- $	110
I&E Services Coordinator	$	80	- $	90
Information Systems Admin I - II	$	70	- $	100
Land Surveyor I - V	$	140	- $	180
Landscape Architect	$	105	- $	115
Landscape Architect CADD Tech I - II	$	55	- $	65
Landscape Designer I	$	70	- $	80
Lead Automation Analyst	$	116	- $	126
Lead Automation Specialist	$	147	- $	157
Lead Automation Technician	$	105	- $	115
Lead Designer	$	100	- $	118
Marketing Coordinator	$	60	- $	120
Marketing Director	$	140	- $	180
Office Engineer	$	120	- $	130
Planner I - IV	$	80	- $	115
Principal Designer	$	105	- $	129
Principal Engineer	$	160	- $	195
Programmer I - II	$	140	- $	165
Project Coordinator I - IV	$	85	- $	125
Project Designer I - IV	$	80	- $	120
Project Engineer	$	120	- $	145
Project Manager / Sr. Principal	$	210	- $	220
Receptionist	$	50	- $	65
Resident Engineer	$	155	- $	165
Sr. Associate Engineer	$	150	- $	175
Sr. Automation Analyst	$	126	- $	136
Sr. Automation Specialist	$	163	- $	170
Sr. Automation Technician	$	126	- $	136
Sr. CADD Tech	$	90	- $	110
Sr. Construction Engineer	$	175	- $	195
Sr. Construction Manager	$	175	- $	200
Sr. Consultant/Director	$	163	- $	250
Sr. Consultant, Public Admin/Finance	$	155	- $	165
Sr. Environmental Planner	$	153	- $	165
Sr. Land Surveyor	$	180	- $	190
Sr. Landscape Architect	$	153	- $	163
Sr. Planner	$	153	- $	163
Sr. Principal Designer	$	110	- $	139
Sr. Principal Engineer	$	175	- $	230
Sr. Project Designer	$	105	- $	130
Sr. Project Engineer	$	130	- $	150
Sr. Resident Engineer	$	165	- $	175
Structures Representative	$	145	- $	155
Survey Engineering Assistant I	$	85	- $	95
Survey Manager	$	180	- $	190
Survey Technician I - VI	$	90	- $	150
Technician	$	115	- $	125
Technical Writer	$	80	- $	120
3D HDS Data Modeling I - III	$	95	- $	125

Survey Crew Rates - Regular

One-Man Field	$	130	- $	205
Two-Man Field	$	185	- $	285
Three-Man Field	$	245	- $	360
One-Man UMO - HDS	$	155	- $	220
Two-Man UMO - HDS	$	238	- $	285
Three-Man UMO - HDS	$	350	- $	375

Survey Crew Rates - Prevailing Wage

One-Man Field	$	155	- $	220
Two-Man Field	$	238	- $	325
Three-Man Field	$	285	- $	425

Electrical - Prevailing Wage

Electrician	$	110	- $	165

Other Direct Charges

In-House Reproduction			
Printing/Copies 8 ½ x 11	$0.05 per page	Black Line Plots	$2.00 per page
Printing/Copies 11 x 17	$1.00 per page	Color Plots	$5.00 per page
Outside Reproduction	Cost + 15%		
Travel and Related Subsistence	Cost + 15%		
Truck or Field Vehicle	$80.00 per day		
Mileage Reimbursement	IRS Rate per mile		
CAD and Simulation Software	$15.00 per day		
Automation & Electrical Materials	Cost + 25% (+tax)		
Subconsultant Fees	Cost + 10%		

All direct expenses, such as special equipment, shipping costs, travel other than by automobile, parking expenses, and permit fees will be billed at the actual cost plus 15%.

If the client requests, or the client's schedule requires work to be done on an overtime basis, a multiplier of 1.5 will be applied to the stated rates for weekdays for daily hours in excess of 8 as well as weekends and a multiplier of 2.0 for daily hours in excess of 12 and holidays.

If the client requests field services to be provided outside of normal working hours (between 6:00 p.m. and 6:00 a.m.), a multiplier of 1.5 will be applied to the stated rates.

Survey Crews and Automation Field staff are billed portal to portal, and mileage charges are included in the hourly rate. A minimum charge of 4 hours will be charged for any Automation Field Service calls outside of normal working hours (between 6:00 p.m. and 6:00 a.m.).

The stated rates are subject to change, typically on an annual basis.

All of the hourly rates include all direct labor costs and labor overhead, general and administrative expenses and profit.

If the client requests, or the client's schedule requires work to be done on an overtime basis, a multiplier of 1.5 will be applied to the rates for weekdays and 2.0 for weekends and holidays.

Appendix

Certificate of Professional Liability

CANNCOR-01 LBINGAMAN

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 06/08/2017

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER License # 0305584 Morris & Garritano Insurance Agency, Inc. PO Drawer 1189 San Luis Obispo, CA 93406	CONTACT NAME: Linda Bingaman PHONE (A/C, No, Ext): (805) 543-6887 308 FAX (A/C, No): (805) 543-3064 E-MAIL ADDRESS: lbingaman@morrisgarritano.com
	INSURER(S) AFFORDING COVERAGE — NAIC #
	INSURER A : American Casualty Company of Reading, Pennsylvania — 20427
INSURED Cannon Corporation 1050 Southwood Drive San Luis Obispo, CA 93401	INSURER B : Transportation Insurance Company — 20494
	INSURER C : Continental Casualty Company — 20443
	INSURER D : State Compensation Insurance Fund of California — 35076
	INSURER E : Atlantic Specialty Insurance Company — 27154
	INSURER F :

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR			2058094931	09/01/2016	09/01/2017	DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 200,000
	X Per Project Aggr.						MED EXP (Any one person)	$ 15,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	POLICY X PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
B	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS			2058094976	09/01/2016	09/01/2017	BODILY INJURY (Per accident)	$
	HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
C	UMBRELLA LIAB X OCCUR						EACH OCCURRENCE	$ 9,000,000
	X EXCESS LIAB CLAIMS-MADE			6043414103	09/01/2016	09/01/2017	AGGREGATE	$ 9,000,000
	DED X RETENTION $ 10,000							$
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						X PER STATUTE / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N (Mandatory in NH)	N/A		91408162016	09/01/2016	09/01/2017	E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
E	Professional Liab			DPL-6878-17	06/08/2017	06/08/2018	Per Claim	2,000,000
E	Claims Made			DPL-6878-17	06/08/2017	06/08/2018	$100K/SIR-Aggregate	2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Carrier AM Best Ratings: Transportation Insurance: A XV, American Casualty Company of Reading: A XV, Atlantic Specialty: A X, Continental Casualty: A XV
State Compensation Insurance Fund not AM Best Rated.

CERTIFICATE HOLDER

Issued for Information & Proposal Purposes

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

ACORD 25 (2016/03)

December 4, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Tapia Primary Clarifier Sludge Collection System Drives: Award

SUMMARY:

As part of the on-going maintenance of the Tapia Water Reclamation Facility (Tapia), equipment is considered for replacement when it reaches the end of its service life. The drives for the sludge collection system, which move the flights in the primary clarifiers, have reached the end of their useful life and are in need of replacement. The drives for the primary clarifier sludge collection system are at least 30 years old, have become obsolete and are labor-intensive to repair.

Staff requested quotations from two authorized vendors that provide new drive equipment for the Polychem sludge collection system used in the primary clarifiers. The quotation provided by the Frost Company included the drives and installation, while the quotation from Gierlich-Mitchell only included the drives. Staff recommends issuing a purchase order to the Frost Company for the purchase and authorized-vendor installation.

RECOMMENDATION(S):

Authorize the Administering Agent/General Manager to issue a purchase order to the Frost Company, in the amount of $67,146.00, for the purchase and installation of new drive units for the primary clarifiers at the Tapia Water Reclamation Facility.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

Sufficient funds are available in the adopted Fiscal Year 2017-18 JPA Budget for this project. The cost of the work will be allocated 70.6% to LVMWD and 29.4% to Triunfo Sanitation District.

DISCUSSION:

The drives for the primary clarifier sludge collection system at Tapia have reached the end of their useful life and are in need of replacement. Two of the primary clarifiers were constructed in 1970, another was built in 1979 and the remaining two were constructed in 1987. The drives for each of these clarifiers are at least 30 years old and have become obsolete. The drives for the secondary clarifier sludge collection system were replaced with SEW Eurodrives through a prior capital project.

One of the valuable features included with the new drive system for secondary clarifiers was the Bibbigard torque limiter, which allows for the drive to be automatically disengaged from the motor on high torque and easily reset by pushing the shaft back into place. The existing drives in the primary clarifiers contain shear pins that break on high torque and need to be replaced for the drive to be put back in service. Replacing the shear pins is a labor-intensive task.

Staff requested quotations from the two vendors that are authorized to provide SEW Eurodrives and the Bibbigard torque limiter for the Polychem sludge collection system at Tapia. The quotation provided by the Frost Company included the materials and installation, while the quotation from Gierlich-Mitchell only included materials. Following is a summary of the quotes:

Frost Company	$67,146 ($41,646 for materials and $25,500 for installation)
Gierlich-Mitchell	$57,158 (materials only)

Having the drives installed by an authorized vendor is preferable to ensure that manufacturer's installation requirements are met. Staff recommends issuing a purchase order to the Frost Company for the purchase and authorized-vendor installation.

Prepared by: Brett Dingman, Water Reclamation Manager

December 4, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Resource Conservation & Public Outreach

Subject : Rancho Las Virgenes Farm Sprayfields Operation and Maintenance: Renewal of Agreement

SUMMARY:

For the past eight years, the JPA Board has authorized the Administering Agent/General Manager to execute one-year contracts with W. Litten, Inc., in annual amounts not to exceed $250,000, for the operation and maintenance of the JPA's Rancho Las Virgenes Farm Sprayfields (Farm). Litten provides effluent disposal services at the Farm as required by the NPDES permit for the Tapia Water Reclamation Facility. Services also include planting and harvesting of crops for nutrient removal as required by Part 503 of the EPA Biosolids Rule, management of the irrigation system for the sprayfields, maintenance of catch basins to prevent off-site runoff and general upkeep of the facility. Additionally, Litten performs maintenance and weed abatement services at other JPA facilities, as needed.

In 2017, Litten's contract expense was approximately $220,808, or 12% below the budgeted amount of $250,000. Litten has consistently provided the services within the budgeted amount, although the work varies from year-to-year based on the volume of effluent disposal needed, demand for recycled water, weather conditions and needed maintenance at the Farm. Last year, although labor and equipment costs increased by 17%, expenses stayed below the budgeted amount. As a result, staff recommends renewing the agreement with Litten.

RECOMMENDATION(S):

Authorize the Administering Agent/General Manager to execute a one-year agreement with W. Litten, Inc., in an amount not to exceed $250,000, for the operation and maintenance of the Rancho Las Virgenes Farm Sprayfields.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

The total cost of the work is not expected to exceed $250,000. Sufficient funds for the first six months of the work are available in the adopted Fiscal Year 2017-18 JPA Budget, and the remaining funds will be proposed in the Fiscal Year 2018-19 JPA Budget.

DISCUSSION:

Attached for reference are a copy of the draft agreement and a summary of the historical annual costs for the work.

GOALS:

Construct, Manage and Maintain All Facilities and Provide Services to Assure System Reliability and Environmental Compatibility

Prepared by: Dave Roberts, Resource Conservation Manager

ATTACHMENTS:

Agreement
Summary of Costs

AGREEMENT

As of January 3, 2018, **LAS VIRGENES MUNICIPAL WATER DISTRICT**, herein "DISTRICT," and **W. LITTEN, INC.**, herein "CONTRACTOR," agree as follows:

1. Scope of Work:

   (a) This agreement sets forth the terms for the contractor to furnish **Sprayfield Operation and Maintenance Services**. The services are described on Exhibit "A".

   (b) The services required under this agreement are variable and dependent on recycled water customer demand, weather, field conditions, crop conditions, competing demands for the land, and other factors. DISTRICT is not responsible for changes in work load resulting from these variations.

   (c) CONTRACTOR assumes full responsibility for having familiarized itself with the nature and extent of the work and CONTRACTOR has visited the areas and correlated observations with the requirements of the agreement.

2. Term:

   This agreement is for one year, beginning January 3, 2018. This agreement may be extended by mutual agreement.

3. Consideration:

   (a) DISTRICT will make payments to CONTRACTOR as set forth on Exhibit "B". The aggregate payments under this Agreement shall not exceed $250,000.00

   (b) DISTRICT shall pay CONTRACTOR upon receipt of a monthly invoice for types of work performed and hours worked. The payment will be for actual time worked as directed by DISTRICT to accomplish needed tasks. The Contractor shall present a demand for payment no later than the 25th day of the month following the month for which payment is sought. The District's check for payment shall be mailed.

   (c) DISTRICT may retain sums sufficient to cover unpaid claims. DISTRICT shall deduct from billings and shall not pay the following:

      i. Charges attributable to work that have, in the opinion of the DISTRICT, not been performed or have been improperly performed by CONTRACTOR.

      ii. Claims for extra work unless the work was approved in writing in advance by the DISTRICT.

4. Laws and Regulations:

CONTRACTOR shall give notices required by law and comply with laws pertaining to the conduct of the work. CONTRACTOR shall exercise necessary precautions for safety and environmental protection and be in compliance with statutory and regulatory. CONTRACTOR shall comply with District policies. CONTRACTOR shall be liable for all violations of the law in connection with the work.

5. Insurance:

CONTRACTOR shall not commence work without Worker's Compensation, Employer's Liability, and Liability Insurance. Insurers must be authorized to do business and have an agent for service of process in California. Excepting only the State Compensation Insurance Fund in reference to Workers' Compensation Insurance, insurers must have an "A" policyholder's rating and a financial rating of at least Class VI in accordance with the most current Best's rating.

CONTRACTOR shall furnish proof of Crime Insurance, including Employee Dishonesty/Fidelity Coverage, to protect the District against loss by theft or mysterious disappearance of property by any of the CONTRACTOR'S employees while DISTRCT property is in the care, custody or control of the CONTRACTOR. Coverage amounts shall be not less than $25,000 per employee, or $100,000 aggregate.

Limits:

General Liability: Bodily injury coverage shall be for not less than $250,000 each occurrence and not less than $500,000 aggregate.

Property damage coverage shall be for not less than $100,000 each occurrence and $500,000 aggregate.

Personal injury coverage shall be for not less than $1,000,000 aggregate.

Bodily injury, personal injury, and property damage coverage shall be in a combined single limit of not less than $1,000,000.

Automobile Liability: Bodily injury coverage shall be for not less than $500,000 each person and not less than $1,000,000 for each accident, per each occurrence.

Property damage coverage shall be for not less than $500,000 each occurrence

or

Bodily injury and property damage coverage shall be in a combined single limit of not less than $1,000,000 for each occurrence.

Employer's Liability: Bodily injury coverage by accident shall be for not less than $1,000,000 for each employee and $1,000,000 for each accident.

Bodily injury coverage by disease shall be for not less than $1,000,000 for each employee and $1,000,000 for each disease.

Workers' Compensation: In accordance with the provisions of Section 3700 of the Labor Code, CONTRACTOR shall secure the payment of compensation to all employees. CONTRACTOR shall sign and file with the DISTRICT the following certificate prior to performing the work of this contract: "I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with such provisions before commencing the performance of the work of this contract".

As evidence of specific insurance coverage, CONTRACTOR shall provide industry-standard ACCORD forms naming the DISTRICT as additionally insured. Said coverage shall not be amended or cancelled without giving at least 30 days advance written notice to DISTRICT. A waiver of subrogation is to be included.

6. Contractor Representative:

CONTRACTOR shall maintain a local representative who can be reached during normal working hours who is authorized to discuss matters pertaining to the agreement.

CONTRACTOR shall also provide a twenty-four (24) hour per day, seven (7) days per week emergency service phone number. Within two (2) hours after a call is made requesting CONTRACTOR perform emergency services, outside of normal business hours, CONTRACTOR shall commence the required service. DISTRICT shall not be charged any additional amount for emergency services unless the services to be provided would be billed as additional work if done in the regular course of CONTRACTOR'S performance.

7. Contractor's Responsibility for Work:

CONTRACTOR shall rebuild, repair, restore, and make good all injuries, losses or damages to any portion of the work, facilities or the materials occasioned by any cause before its completion and acceptance and shall bear the expense thereof. Where necessary to protect the work, facilities or materials from damage, CONTRACTOR shall at his expense provide suitable drainage and erect such temporary structures as are necessary to protect the work, facilities or materials from damage. The suspension of the work or the granting of an extension of time from any cause whatever shall not relieve CONTRACTOR of his responsibility for the work and materials as herein specified. In an emergency affecting the safety of life or property, including adjoining property, CONTRACTOR, without special instructions or authorizations, shall act at his discretion to prevent such threatened loss or injury.

8. Safety:

CONTRACTOR shall be solely and completely responsible for conditions of the jobsite, including safety of persons and property during performance of the work. The right of the DISTRICT'S representative to conduct review or observation of the CONTRACTOR'S performance will not include review or observation of the adequacy of the CONTRACTOR'S safety measures in, on, or near the site.

9. Contractor's Personnel:

(a) DISTRICT may require CONTRACTOR to remove from the work site(s) any employee(s) deemed, careless, incompetent, or who is an annoyance to the public.

(b) CONTRACTOR shall publish and distribute to all employees, workers and subcontractors (hereinafter worker) a statement notifying worker that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited. Any worker under the effect or residual effect of such controlled substance is considered a hazard and shall be removed from the job site immediately. This notice shall state that the worker has an obligation to abide by the terms of the agreement and to notify the CONTRACTOR in writing of any violation of a criminal drug statute occurring in the workplace or at the job site. CONTRACTOR shall notify DISTRICT of such incident and take appropriate action within thirty (30) days. CONTRACTOR is responsible to see that this requirement is included in all Subcontractor contracts.

(c) CONTRACTOR shall provide to its employees environmental, health and safety training to ensure compliance with all federal, state and local laws or regulations.

10. Assignment of Contract:

CONTRACTOR shall not assign this contract, or any right or interests hereunder, without the prior consent in writing of the DISTRICT.

IN WITNESS WHEREOF, this Agreement is executed by DISTRICT and CONTRACTOR as follows.

Las Virgenes Municipal Water District

By: _____
David W. Pedersen, Administering Agent/General Manager

Dated: _____ , 20___

W. Litten Inc.

By:_____
W. Dean Litten

Dated: _____ , 20___

Approved as to Form:

_____
Wayne K. Lemieux, District Counsel

EXHIBIT "A"
SCOPE OF WORK

1. WORK OBJECTIVES

Disposal of surplus recycled water at the Rancho Las Virgenes Farm (Farm) is necessary during periods of low demand, from April 15 to November 15 every year, in order to meet the National Pollutant Discharge Elimination System (NPDES) permit for operation of the Tapia Water Reclamation Facility (Tapia). Partially treated wastewater or biosolids may also be disposed of at the Farm should operational emergencies or upsets occur in the wastewater treatment system. The disposal of recycled water requires the planting and harvesting of crops for nutrient removal as required by Part 503 of federal biosolids regulations, maintenance of catch basins to prevent offsite runoff and general maintenance of the Farm. The work includes furnishing labor and equipment necessary to meet these permit requirements.

2. FACILITIES DESCRIPTION

A. General

Rancho Las Virgenes Farm
3700 Las Virgenes Road
Calabasas, CA 91302

The Rancho Las Virgenes Farm comprises approximately 70 acres of generally flat fields, falling off slightly to the west for positive drainage during periods of heavy rainfall. This acreage is divided into 15 separately irrigated fields, 12 of which take water through booster pumps. The farm fields are utilized primarily for seasonal waste spray of surplus recycled water. Occasionally, one or more fields is taken out of production, prepped for injection of biosolids, and then replanted after the injection process is complete. A mixture of grasses and legumes—including but not limited to fescue, rye, orchard grass, clover and alfalfa--is grown as a means of nutrient and moisture uptake and erosion control. The fields are managed with a variety of methods, including but not limited to green chopping, mowing, baling and discing.

Additionally, approximately 2 acres of hillside has been developed into a field used solely for spray application of recycled water. This area is covered with native vegetation.

Soils vary from clay loam to sandy loam.

Irrigation water is non-potable water and should not be used for drinking, washing or other uses.

B. Additional Locations

The Contractor may be requested to perform similar or associated duties on other lands. The cost to complete these requested tasks shall be based upon the unit prices contained in the bid form.

C. HOURS OF WORK AND FACILITY ACCESS

As directed, the Contractor shall perform the required work primarily during the hours of 7:30 am to 5:00 p.m. Monday through Friday. Work outside of these hours may be directed by District staff, including work in the evening and over weekends and holidays. Labor and equipment requirements vary with the season. The Contractor shall be provided all necessary keys, access cards and codes required to complete the work.

3. DISTRICT/CONTRACTOR REPRESENTATIVES

The Contractor will work with one or more designated District representatives regarding the terms and conditions of the contract. The Contractor shall designate a single representative that has the authority to act for the Contractor. Directives can be either verbal or written, although all directives requiring extra work shall be in written form only. If the Contractor acts upon direction from anyone other then the representatives named by the District, they will not be entitled to additional compensation for any work that results.

4. EQUIPMENT AND LABOR

The Contractor shall at all times furnish and maintain sufficient labor and equipment to perform the work of this contract.

“To perform the work of this contract” means that the facilities, fields and equipment will be continually maintained in the most desirable of conditions, and that water application will be maximized – when directed – with zero off-site runoff.

The Contractors equipment shall be subject to the inspection and approval of the District. There are limited areas available to the Contractor for the storage and/or maintenance of equipment and materials.

5. STANDARDS OF PERFORMANCE

Irrigation is accomplished via above ground, solid-set irrigation systems constructed of District-owned steel and aluminum irrigation pipe typically arranged in a 40’ by 30’ sprinkler head spacing.

Under no circumstances can the ground be disturbed or can irrigation water be allowed to fall within the drip-line of any oak tree.

All other portions of these specifications notwithstanding, it is agreed that the intent of

this contract is to provide a level of management that will also present a pleasing and desirable appearance at all times.

The District representative:

1. Shall decide any and all questions that may arise as to claims and compensation;
2. Shall have authority to enforce and make effective such decisions and orders as the Contractor fails to promptly carry out;
3. Shall have the authority to implement alternative action either by District forces or request separate contract to accomplish the work and prevent loss or damage based upon the urgency of the conditions;
4. Shall decide any and all questions which may arise as to:
    a. The quality or acceptability of the materials furnished and the work performed.
    b. The manner of performance.
    c. The rate of performance.
    d. The interpretation of the work specifications.
    e. The acceptable fulfillment of the contract on the part of the Contractor.
5. Shall direct the work and the administration of the work.

6. MATERIALS

All materials and equipment used shall conform to District specifications.

Contractor supplied:

Caterpillar D6 dozer or equivalent
Farm utility tractors
Pick-up trucks
Flail Mower
Ring Roller
Chainsaws
Spray equipment
Weedeaters

District supplied:

John Deere 6320-L tractor
Backhoe
Crop chopper
Harvest wagon
Rotary mower
Disc
Tool bar with chisel plow attachments
PTO powered broadcast Seeder
Portable pumps – all sizes

7. TASK DESCRIPTIONS

This provides an overview of possible tasks, however, these tasks may or may not need to be accomplished, depending upon the conditions present at that time. Conditions dictating the need to perform a certain task include District recycled water customer irrigation demand, weather, sprayfield conditions, crop conditions, and competing demands for use of the land.

July through August

Dismantle irrigation pipe.
Manage vegetation, as directed, by any or all of the following methods
- Harvest and transport off fields
- Cut and leave on field
- Cut and disc into field

Improve drainage of fields as needed
- Rip soil to 24+ inches
- Develop and maintain farm ditches, mechanically and by hand

Prepare fields for planting as needed
- May include discing, rock removal, ring rolling

Seeding as needed
Set up irrigation pipe
Weed control on and off fields as directed

September through November

Operate sprayfields
- Turn water on and off, record meter readings, repair breaks, maintain equipment

Monitor field conditions to prevent runoff
Continue with vegetation and weed management

December through March

Dismantle irrigation pipe.
Pump catch basin water to fields
Remove plugs from catch basin drain outlets
Manage vegetation, as directed, by any or all of the following methods
- Harvest and transport off fields
- Cut and leave on field
- Cut and disc into field

Improve drainage of fields as needed
- Rip soil to 24+ inches
- Develop and maintain farm ditches, mechanically and by hand

Prepare fields for planting as needed
- May include discing, rock removal, ring rolling

Seeding as needed
Set up irrigation pipe

Weed control on and off fields as directed

April through June

Plug catch basin outlets to storm drain system
Operate sprayfields
Turn water on and off, record meter readings, repair breaks, maintain equipment
Monitor field conditions to prevent runoff
Continue with vegetation and weed management

Year round activities

Maintain and repair farm equipment
Maintain roads and fences as needed
Maintain irrigation equipment
Valve repair, sprinkler head repair, portable pump maintenance, etc.
Develop new sprayfields if land becomes available
clearing, ripping, discing, seeding and irrigation system setup

8. FIELD CARE

The Contractor shall receive all fields, drainages, catch basins, roads and adjacent areas in good condition at the beginning of the contract. If the condition of any area found to be otherwise at the start of work, the District shall be notified in writing immediately. Necessary repairs shall not occur prior to District authorization.

At the close of the contract period, all fields, drainages, catch basins, roads and adjacent areas shall be checked by the District and shall be returned to the District in a satisfactory condition. Any area found to be in an unsatisfactory condition as a result of negligence on the part of the Contractor, as determined by the District, shall be repaired by the Contractor at no cost to the District.

9. FIELD MONITORING

Each day the Contractor is on site, the Contractor shall inspect the sprayfields for soil and crop condition and report any problems to the District.

10. FIELD MANAGEMENT

Fields will be managed to optimize the ability to accept irrigation water without runoff. Crops will be managed to eliminate weed populations and prevent weed invasion. Non-cultivated fields will be managed to eliminate weeds via well-timed fieldwork, as conditions permit, and to promote the growth and success of desired vegetation.

The Contractor shall notify the District immediately upon discovery of damage to any fields. Costs to repair fields or replace crops damaged as a result of anything other than Contractor neglect will be borne by the District. Costs to repair fields or replace

crops damaged as a result of Contractor's neglect shall be borne by the Contractor. The Contractor shall repair said damage immediately after authorization to repair has been received from the District.

11. MANAGEMENT OF ADJACENT BASINS, BERMS AND ROADS

A. BASINS

Basins will not be allowed to fill with sediments, but will always maintain an acceptable capacity below the standpipe gate to capture any excess irrigation water that might leave the field in an emergency situation.

B. BERMS

Berms will be kept clear of weeds, and managed to promote the growth of desired vegetation for erosion control.

C. ROADS

Roads will be kept clear of weeds and soil. Potholes and washouts will be repaired immediately.

12. EQUIPMENT AND IRRIGATION SYSTEMS CARE

The Contractor shall receive all equipment and irrigation systems in sound working order at the beginning of the contract. If the working order of any equipment or irrigation system component is found to be otherwise at the start of work, the District shall be notified in writing immediately. Necessary repairs shall not occur prior to District authorization.

Irrigation repairs and maintenance shall meet the requirements of DISTRICT and American Water Works Association standards and specifications pertaining to recycled water use. The District shall provide a copy of these standards for the Contractor to follow.

At the close of the contract period, all equipment and irrigation system components shall be checked by the District and shall be returned to the District in a satisfactory condition. Any equipment or system component found to be faulty as a result of negligence on the part of the Contractor, as determined by the District, shall be repaired or replaced by the Contractor at no cost to the District.

13. SYSTEMS MONITORING

The Contractor shall inspect the irrigation systems continually for broken and clogged heads, malfunctioning or leaking valves, or any other conditions that hamper the correct operation of the system or reduce irrigation or result in runoff. The Contractor shall clean and adjust irrigation heads as needed for proper coverage. Authorization must be obtained from the District before proceeding with repair work.

14. EQUIPMENT AND IRRIGATION SYSTEM MAINTENANCE, REPAIR AND OPERATION

The Contractor shall notify the District immediately upon discovery of damage to equipment and/or irrigation system components. Costs to repair or replace equipment and/or irrigation system components deteriorating due to normal wear and tear or that have been damaged by vandalism will be borne by the District. Costs to replace equipment and/or irrigation system components which have deteriorated or been damaged as a result of Contractor's neglect shall be borne by the Contractor. The Contractor shall repair said damage as soon as possible after authorization to repair has been received from the District.

Any damages resulting from a failure of the Contractor to promptly report or repair equipment or irrigation system problems will require Contractor to make repairs at his own expense. All replacement of equipment parts and irrigation system components shall be original equipment types where known. All substitutions for replacement equipment and components shall be approved by the District prior to performing the work.

Irrigation shall be performed by the use of manually operated irrigation systems. The Contractor will ensure uniform coverage of the irrigated areas by the irrigation system.

All damages to public or private property, as well as any fines levied against the District as a result of excessive irrigation water or irrigation water run off shall be charged against the contract payment unless the Contractor makes immediate reparation to the satisfaction of the District.

15. OTHER SERVICES AT JPA FACILITIES AS NEEDED

In addition to the services identified above, the Contractor shall perform other services at JPA facilities, other than the sprayfields, as needed and identified by JPA staff.

EXHIBIT "B"
SPRAYFIELD PROGRAM SERVICES
UNIT COSTS

	Unit Cost[1] per Hour
D-6 9U with operator	70.00
50 HP wheel tractor with operator	52.00
Pickup trucks	12.00
Disc	10.00
Ring Roller	5.00
Box Scraper	6.00
Flail Mower	25.00
Chainsaw	5.75
Weedeater	5.75
Labor – Unskilled	23.10
Labor – Skilled	27.62
Foreman	31.15
Operator only for district-supplied equipment	43.70
Supervisor	43.40
Labor – Unskilled: Overtime	9.50
Labor – Skilled: Overtime	14.00
Foreman: Overtime	15.00
Operator only for district-supplied equipment: Overtime	21.50
Supervisor: Overtime	22.00

[1]Units include all overhead costs.

COST	2007*	2008**	2009	2010	2011	2012	2013	2014	2015	2016	2017 Budget	2017 Estimated Actual	2018 Requested
Rancho Las Virgenes Farm													
W. Litten	$ 244,408	$ 251,550	$ 192,742	$ 232,163	$ 236,964	$ 236,118	$ 238,614	$ 199,989	$ 207,370	$ 201,447	$ 209,000	$ 220,808	$ 250,000
District	$ 25,410	$ 20,557	$ 37,892	$ 43,584	$ 44,455	$ 42,718	$ 40,459	$ 22,356	$ 29,274	$ 35,000	$ 10,000	$ 27,208	$ 35,000
Subtotal	$ 269,818	$ 272,106	$ 230,634	$ 275,747	$ 281,419	$ 278,836	$ 279,073	$ 222,345	$ 236,644	$ 285,000	$ 219,000	$ 248,016	$ 285,000
King Gillette Ranch													
W. Litten	$ 99,474	$ 58,902	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
District	$ 12,139	$ 2,969	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Lease	$ 264,000	$ 132,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal	$ 375,613	$ 193,870	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Summary													
W. Litten	**$ 343,882**	**$ 310,451**	**$ 192,742**	**$ 232,163**	**$ 236,964**	**$ 236,118**	**$ 238,614**	**$ 199,989**	**$ 207,370**	**$ 201,447**	**$ 209,000**	**$ 220,808**	**$ 250,000**
District	$ 37,549	$ 23,525	$ 37,892	$ 43,584	$ 44,455	$ 42,718	$ 40,459	$ 26,340	$ 29,274	$ 22,195	$ 35,000	$ 27,208	$ 35,000
Lease	$ 264,000	$ 132,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$ 645,431	$ 465,976	$ 230,634	$ 275,747	$ 281,419	$ 278,836	$ 279,073	$ 226,329	$ 236,644	$ 223,642	$ 219,000	$ 248,016	$ 285,000

*reduced King Gillette operation
**no King Gillette operation

EFFLUENT DISPOSAL (mg)	2007*	2008**	2009	2010	2011	2012	2013	2014	2015	2016		2017 Estimated Actual	
Farm	90	37	53	97	75	87	50	25	61	0.5		30	
King Gillette	78	0	0	0	0	0	0	0	0	0		0	
005	33	41	210	175	181	117	12	0	22	63		0	

ITEM 10A

INFORMATION ONLY

December 4, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Carbon Tower Media Replacement: Authorization of Purchase Order

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The Las Virgenes-Triunfo Joint Powers Authority (JPA) approved funding for this matter in the JPA Budget. On November 14, 2017, the LVMWD Board, acting as the Administering Agent of the JPA, authorized the General Manager to issue a purchase order, in the amount of $40,000, to Prominent Systems, Inc., for replacement of the carbon tower media at the Tapia Water Reclamation Facility and at Lift Station Nos. 1 and 2.

SUMMARY:

One of the regular maintenance projects included in the budget is for the periodic replacement of granular activated carbon in the odor control towers at the Tapia Water Reclamation Facility and at Lift Station Nos. 1 and 2. For Fiscal Year 2017-18, one headworks carbon tower and two primary sedimentation tank carbon towers are scheduled for replacement. Also, smaller carbon towers at Lift Station Nos. 1 and 2 are due for replacement. A request for quotations was advertised on the District's website and two bids were received for the work. Staff recommends award of the work to the low bidder, Prominent Systems, Inc.

RECOMMENDATION(S):

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

Sufficient funds are available in the adopted Fiscal Year 2017-18 JPA Budget for the media replacement at the Tapia Water Reclamation Facility. The cost of the work is allocated 70.6% to LVMWD and 29.4% to Triunfo Sanitation District. Sufficient funds are available in the adopted Fiscal Year 2017-18 LVMWD Budget for the media replacement at Lift Station Nos.

1 and 2, which are LVMWD-only facilities.

DISCUSSION:

There are four carbon towers at Tapia's headworks facility, and three carbon towers at the primary sedimentation tanks. For Fiscal Year 2017-18, one headworks carbon tower (18,000 lbs.) and two primary sedimentation tank carbon towers (6,000 lbs. each) are scheduled for replacement. Carbon life expectancy for the primary sedimentation tank carbon towers is approximately one year, and for the headworks carbon towers it is approximately two years. Additionally, there are 600-lb. carbon tower at each lift station, which need replacement annually. A request for quotations was advertised on the District's website, and the following two bids were received for the work:

Prominent Systems, Inc.	$39,001.23
Carbon Activated Corp.	$40,915.17

GOALS:

Construct, Manage and Maintain All Facilities and Provide Services to Assure System Reliability and Environmental Compatibility

Prepared by: Brett Dingman, Water Reclamation Manager

ITEM 10B

INFORMATION ONLY

December 4, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Tapia and Headquarters Lighting Efficiency Upgrade Project: Award

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The Las Virgenes-Triunfo Joint Powers Authority (JPA) approved funding for the Tapia portion of this matter in the JPA Budget. The LVMWD Board of Directors, acting as the Administering Agent of the JPA, accepted the proposal from Retro-Tek Energy Services, Inc., and authorized the General Manager to execute a contractual services agreement, in the amount of $441,616, for the Tapia and Headquarters Lighting Efficiency Upgrade Project ($313,545 for Tapia, a JPA project, and $128,071 for Headquarters, an LVMWD project).

SUMMARY:

As a part of an organizational effort to become more energy efficient, staff has been working with The Energy Network (TEN) to develop plans to systemically replace aging, inefficient lighting fixtures at the District's major facilities. Most of the lighting fixtures targeted for replacement have reached the end of their useful life. The scope of work for the Tapia and Headquarters Lighting Efficiency Upgrade Project is to replace the lighting fixtures at the Tapia Water Reclamation Facility and Headquarters building.

A Request for Proposals was released on October 6, 2017, and five proposals were received. After reviewing the proposals, staff recommends awarding the project to Tapia and Headquarters Lighting Efficiency Upgrade Project to Retro-Tek Energy Services, Inc., the lowest overall bidder. The low bid was approximately 20% below the Engineer's Estimate, and the payback period for the project is estimated to be 6.3 years.

RECOMMENDATION(S):

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

The total cost of the project is $441,616, which is 20.1% below the Engineer's Estimate. The payback period for the project is estimated to be 6.3 years. Sufficient funds are available in the adopted Fiscal Year 2017-18 JPA and LVMWD Budgets for the work. No additional appropriation is needed.

Tapia's estimated annual energy savings is 279,924 kWh, or $28,543.85, and annual maintenance cost-savings are estimated to be $10,451.52 due to the durable nature of the modern LED lighting fixtures. Further, an incentive of $16,614.16 was approved by SCE for the Tapia portion of the work provided it is completed by February 2018.

The Headquarters' estimated annual energy savings is 115,679kWh, or $22,351.08, and annual maintenance cost-savings are estimated to be $6,122.16. Further, an incentive of $1,937.50 was approved by SCE for the Headquarters portion of the work provided it is completed by August 2018.

After accounting for both the incentives and savings in energy and maintenance costs, the payback period for this project is estimated to be 6.3 years.

DISCUSSION:

For the last few years, staff has been working with TEN and their specialty energy consultants to identify and implement energy-saving projects. TEN is funded by the California Energy Commission to help public agencies take action to save energy. Together with TEN, the District has completed the Westlake Filter Plant LED lighting project, Rancho Sump Pump Upgrade and the Westlake Pump Station VFD and electrification projects. The Tapia and Headquarters Lighting Efficiency Upgrade Project was identified as the next feasible energy-saving project to implement due to the fact that the lighting fixtures are at the end of their useful life, replacement parts are not readily available and there will be significant savings from the upgrades coupled with lower maintenance costs resulting from the modern durable LED lighting fixtures.

Following is a summary of the five proposals received:

Name of Firms	TapiaCost	Headquarters Cost	Total Proposed Cost	% Over/below Estimate
Engineering Estimate	*$348,384.00*	*$204,072.00*	*$552,456.00*	
Retro-Tek	$313,545.00	$128,071.00	$441,616.00	-20.1%
Optima	$401,180.48	$127,282.74	$528,463.22	-4.3%
Pac Energy	$413,046.11	$234,290.81	$647,336.92	17.2%
J Kim	$557,928.00	$165,214.00	$723,142.00	30.9%
OSRAM	$524,549.23	$232,441.78	$756,991.00	37.0%

After reviewing the proposals, including checking the references and qualifications, staff determined that the proposal from Retro-Tek meets the project requirements. Although Retro-

Tek's proposed fee for Headquarters is $788.26 more than that quoted by Optima, Retro-Tek's had the lowest overall cost for the project. Staff does not recommend breaking down the project and awarding the Tapia and Headquarters work separately because the RFP and proposals were structured to award the two locations as one contract to take advantage of economies of scales and obtain the lowest overall cost. Retro-Tek is also committed to complete the Tapia and Headquarters Lighting Efficiency Upgrade Project before the incentive deadlines from SCE.

Funding to retrofit the lighting fixtures at the Rancho Las Virgenes Composting Facility is proposed to be included in the Fiscal Year 2018-19 Budget.

GOALS:

Construct, Manage and Maintain All Facilities and Provide Services to Assure System Reliability and Environmental Compatibility

Completion of the Tapia and Headquarters Lighting Efficiency Upgrade Project would not only improve the existing aging lighting system, it would also reduce the carbon footprint, save ongoing energy costs, and reduce maintenance costs for decades to come along with an excellent payback period of 6.3 years.

Prepared by: John Zhao. P.E., Principal Engineer

ATTACHMENTS:

Proposal from Retro-Tek

RETRO-TEK
ENERGY SERVICES, INC.

PROPOSAL

RFP- TAPIA AND HEADQUARTERS LIGHTING EFFICIENCY UPGRADE PROJECT

269 WOODLAND DRIVE
VISTA, CA 92083
(760) 643-0307
C-10 #794327

10/28/2017

John Zhao
Principal Engineer
Las Virgenes MWD
4232 Las Virgenes Rd.
Calabasas, CA 91302
(818) 251-2230

John,

This is Retro-Tek Energy Services proposal for RFP- Tapia and Headquarters Lighting Efficiency Upgrade Project. The proposal is turnkey using the LVMWD provided Revised Attachment A dated 10/26/2017. We acknowledge the receipt of Addendum #1 and #2. See Revised Attachment A Proposal Price Sheet for itemized pricing. Retro-Tek Energy Services will perform this lighting project in house and will not use any subcontractors. Our C-10 License is #794327 and our DIR registration is #1000006217 expiration 06/30/2018. We specialize in energy efficient lighting and controls and we employ state certified Journeymen, NRLT and Apprentices and we are a member WECA. We can complete a project of this size in 60 days once material has been received. We are attaching our current insurance certification and recent project experience for references.

We are proposing a turnkey lighting retrofit with the LVMWD supplied Attachment A dated 10/26/2017 using the material listed in the attachment with no substitutions. We recommend using Sensor Switch ceiling and wall sensors. Sensor Switch is owned by the same company that makes Lithonia.

TOTAL PROJECT COST- $441,616.00

If you have any questions, feel to contact Brad Howard at (760) 644-2060 or (760) 643-037. Thank you for your time and consideration of this proposal.

Respectfully,

James R Howard

James R. Howard
President

RETRO-TEK ENERGY SERVICES, INC.
269WOODLAND, VISTA, CA 92083
OFFICE- (760) 643-0307 FAX- (760) 639-1974
C-10 LICENSE #794327

Attachment A (Revision 10/26/2017) Lighting Audit Table/ Proposal Price Sheet

Site	Building	Location	Qty	Fixture Code	Baseline Fixture	Proposed Description	Controls Type	Controls Qty	Control Unit Price	Control Subtotal	Allowed Construction Schedule	Lighting Unit Price	Lighting Subtotal	Notes
HQ	8	1 - Board Room Men's	2	F31C	3ft 22W T8 lamp in Indirect Cove Fixture	GE 13W 36" T8 LED tube type C (LED13T8/3/840)	Maintain Existing Controls			$0.00	B	$40.00	$80.00	
HQ	8	1 - Board Room Men's	1	F41R	4ft 32W T8 lamp in Recessed Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	elevator	9	CFL13	13W Screw-in CFL	CREE A19 LED, 9W (BA19-08050OMF2)	Maintain Existing Controls			$0.00	B	$15.00	$135.00	
HQ	8	Stairs. 1	9	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	B	$300.00	$2,700.00	
HQ	8	Stairs. 2.	9	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	B	$300.00	$2,700.00	
HQ	8	1 - Storage room	1	F42RTDI	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Direct Indirect Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$48.00	$48.00	
HQ	8	2 - training Room	28	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	B	$48.00	$1,344.00	
HQ	8	1 - 1st floor corner office	6	F41RT14	4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$240.00	
HQ	8	1 - 1st floor open office	58	F42PI	(2) 4ft 32W T8 lamp in Indirect Pendant Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$48.00	$2,784.00	
HQ	8	1 - 1st floor open office	19	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$1,140.00	
HQ	8	1 - 1st floor open office	2	F32PI	(2) 3ft 22W T8 lamp in Indirect Pendant Fixture	GE 13W 36" T8 LED tube type C (LED13T8/3/840)	Maintain Existing Controls			$0.00	B	$48.00	$96.00	
HQ	8	1 - AV room	6	F41RT14	4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$240.00	
HQ	8	1 - AV room	5	MR50	50W MR16 Lamp	GE 7W MR16 LED (LED7XDMR16-28335)	Maintain Existing Controls			$0.00	B	$20.00	$100.00	
HQ	8	1 - Board Room	49	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$2,940.00	
HQ	8	1 - Board Room	84	F21CI	2ft 17W T8 lamp in Indirect Cove Fixture	GE 9W 24" T8 LED tube type C (LED9T8/2/840)	Maintain Existing Controls			$0.00	B	$40.00	$3,360.00	
HQ	8	1 - Board Room Half	8	CFL18WM	18W Pin Based CFL in Wall Mounted Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$30.00	$240.00	
HQ	8	1 - Board Room Half	2	MR50	50W MR16 Lamp	GE 7W MR16 LED (LED7XDMR16-28335)	Maintain Existing Controls			$0.00	B	$20.00	$40.00	
HQ	8	1 - Board Room Half	5	PAR50	50W PAR30 Lamp	CREE 10.5W PAR30 LED (BPAR30L-0803040C-12DE26-1C100)	Maintain Existing Controls			$0.00	B	$35.00	$175.00	
HQ	8	1 - Board Room Half	8	F42CI	(2) 4ft 32W T8 lamp in Indirect Cove Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$48.00	$384.00	
HQ	8	1 - Board Room women's	2	F31C	3ft 22W T8 lamp in Indirect Cove Fixture	GE 13W 36" T8 LED tube type C (LED13T8/3/840)	Maintain Existing Controls			$0.00	B	$40.00	$80.00	
HQ	8	1 - Board Room women's	1	F41R	4ft 32W T8 lamp in Recessed Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	1 - Board Room storage	1	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	1 - conf room B	4	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$245.00	$980.00	
HQ	8	1 - exterior	16	HPS35RC-Ext	35W HPS Recessed Can Fixture, Exterior	CREE CR6, 12W (CR6-800L-40K)	Maintain Existing Controls			$0.00	B	$120.00	$1,920.00	
HQ	8	1 - exterior	31	CFL32WP	32W Pin Based CFL in Wall Mounted Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$30.00	$930.00	
HQ	8	1 - library	10	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	B	$48.00	$480.00	
HQ	8	1 - library	9	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$540.00	
HQ	8	1 - lobby coffee room	20	F41RT14	4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$800.00	
HQ	8	1 - lobby file room	2	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$48.00	$96.00	
HQ	8	1 - lobby main	29	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$1,740.00	
HQ	8	1 - lobby main	14	MR50	50W MR16 Lamp	GE 7W MR16 LED (LED7XDMR16-28335)	Maintain Existing Controls			$0.00	B	$20.00	$280.00	
HQ	8	1 - lobby open office	7	F42PI	(2) 4ft 32W T8 lamp in Indirect Pendant Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$48.00	$336.00	
HQ	8	1 - lobby open office	5	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$300.00	
HQ	8	1 - lobby small office	1	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$48.00	$48.00	
HQ	8	1 - lunch room	18	F41RT14	4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$720.00	
HQ	8	1 - men's Room - lobby	6	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$360.00	
HQ	8	1 - men's Room - lobby	1	F21C	2ft 17W T8 lamp in Cove Fixture	GE 9W 24" T8 LED tube type C (LED9T8/2/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	1 - men's Room - lobby	1	F31C	3ft 22W T8 lamp in Indirect Cove Fixture	GE 13W 36" T8 LED tube type C (LED13T8/3/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	1 - priv office 1	4	F41RT14	4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$160.00	
HQ	8	1 - priv office 2	4	F41RT	4ft 32W T8 lamp in Recessed Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$160.00	
HQ	8	1 - priv office 3	4	F41RT	4ft 32W T8 lamp in Recessed Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$160.00	
HQ	8	1 - priv office 4	4	F41RT	4ft 32W T8 lamp in Recessed Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$160.00	
HQ	8	1 - priv office center 1	4	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$48.00	$192.00	
HQ	8	1 - priv office center 2	4	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$48.00	$192.00	
HQ	8	1 - rm 105 conf room	4	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	B	$245.00	$980.00	
HQ	8	1 - women's room - lobby	6	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$360.00	
HQ	8	1 - women's room - lobby	1	F21C	2ft 17W T8 lamp in Cove Fixture	GE 9W 24" T8 LED tube type C (LED9T8/2/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	1 - women's room - lobby	1	F31C	3ft 22W T8 lamp in Indirect Cove Fixture	GE 13W 36" T8 LED tube type C (LED13T8/3/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	2 - corner office	6	F41RT-28	4ft 28W T8 lamp in Recessed Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$240.00	
HQ	8	2 - 2nd floor large storage	3	F41PO5	4ft 32W T8 lamp in Pendant Open Strip Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$120.00	
HQ	8	2 - 2nd floor Lobby	25	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$1,500.00	
HQ	8	2 - 2nd floor Lobby	10	No Change	No Change	No Change	Maintain Existing Controls			$0.00	B	$0.00	$0.00	
HQ	8	2 - 2nd Floor open office	40	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Ceiling Mounted Occupancy Sensor	4	$250.00	$1,000.00	B	$48.00	$1,920.00	
HQ	8	2 - 2nd Floor open office	2	F32PI	(2) 3ft 22W T8 lamp in Indirect Pendant Fixture	GE 13W 36" T8 LED tube type C (LED13T8/3/840)	Maintain Existing Controls			$0.00	B	$48.00	$96.00	
HQ	8	2 - 2nd Floor open office	14	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$840.00	
HQ	8	2 - 2nd Floor open office	14	F41RT14-28	4ft 28W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$560.00	
HQ	8	2 - conference rest room	2	F41R	4ft 32W T8 lamp in Recessed Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$20.00	$40.00	
HQ	8	2 - conference Room	5	MR50	50W MR16 Lamp	GE 7W MR16 LED (LED7XDMR16-28335)	Maintain Existing Controls			$0.00	B	$45.00	$225.00	
HQ	8	2 - conference Room	14	F22CI-T5	(2) 2ft 14W T5 lamps in Indirect Cove Fixture	GE 9W 24" T8 LED tube type C (LED9T8/2/840)	Maintain Existing Controls			$0.00	B	$40.00	$560.00	
HQ	8	2 - conference Room	4	F41CI	4ft 32W T8 lamp in Indirect Cove Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$160.00	
HQ	8	2 - conference Room-Emergency up center	16	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Ceiling Mounted Occupancy Sensor	1	$240.00	$240.00	B	$48.00	$768.00	
HQ	8	2 - corner office	5	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Wall Mounted Occupancy Sensor	1	$100.00	$100.00	B	$48.00	$240.00	
HQ	8	2 - exterior landing	26	HPS35RC-Ext	35W HPS Recessed Can Fixture, Exterior	CREE CR6, 12W (CR6-800L-40K)	Maintain Existing Controls			$0.00	B	$120.00	$3,120.00	
HQ	8	2 - file room	2	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$48.00	$96.00	
HQ	8	2 - General manger	5	F42RTDI	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Direct Indirect Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$48.00	$240.00	
HQ	8	2 - General manger	3	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$180.00	
HQ	8	2 - Janitor/ electrical	2	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$120.00	
HQ	8	2 - men's Room	4	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$240.00	
HQ	8	2 - men's Room	1	F21C	2ft 17W T8 lamp in Cove Fixture	GE 9W 24" T8 LED tube type C (LED9T8/2/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	2 - men's Room	1	F31C	3ft 22W T8 lamp in Indirect Cove Fixture	GE 13W 36" T8 LED tube type C (LED13T8/3/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	2 - office 1	1	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$245.00	$245.00	
HQ	8	2 - office 1	1	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	B	$245.00	$245.00	
HQ	8	2 - office 2	1	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$245.00	$245.00	
HQ	8	2 - office 2	1	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	B	$245.00	$245.00	
HQ	8	2 - office 3	1	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$245.00	$245.00	
HQ	8	2 - office 3	1	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	B	$245.00	$245.00	
HQ	8	2 - office 4	1	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$245.00	$245.00	
HQ	8	2 - office 4	1	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	B	$245.00	$245.00	
HQ	8	2 - office 5	1	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$245.00	$245.00	
HQ	8	2 - office 5	1	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	B	$245.00	$245.00	
HQ	8	2 - office 6	1	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$245.00	$245.00	
HQ	8	2 - office 6	1	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	B	$245.00	$245.00	
HQ	8	2 - office 7	1	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$245.00	$245.00	
HQ	8	2 - office 7	1	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	B	$245.00	$245.00	
HQ	8	2 - open office copy Room	6	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$48.00	$288.00	
HQ	8	2 - open office file Room	18	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$48.00	$864.00	
HQ	8	2 - record storage	1	F41SM-28	4ft 28W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	2 - record storage	1	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	2 - stair 2 hall	10	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$600.00	
HQ	8	2 - women's room	4	RC18/2	(2) 18W CFL in Recessed Can Fixture	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$60.00	$240.00	
HQ	8	2 - women's room	1	F21C	2ft 17W T8 lamp in Cove Fixture	GE 9W 24" T8 LED tube type C (LED9T8/2/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	2 - women's room	1	F31C	3ft 22W T8 lamp in Indirect Cove Fixture	GE 13W 36" T8 LED tube type C (LED13T8/3/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	3 - 3rd Fl. Mech. Room	12	F41T8-Lamps	4ft 32W T8 lamp in Pendant Mounted Array Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$480.00	
HQ	8	3 - 3rd Fl. Mech. Room and Landing	8	F41T8-Lamps	4ft 32W T8 lamp in Pendant Mounted Array Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$320.00	
HQ	8	3 - 3rd Fl. Mech. Room and Landing 2	8	F41T8-Lamps	4ft 32W T8 lamp in Pendant Mounted Array Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$320.00	
HQ	8	ground - electrical 3	2	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$80.00	
HQ	8	ground - elevator equipment	2	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$80.00	
HQ	8	ground - fan room	5	INC60	60W Incandescent Screw-in Lamps	CREE A19 LED, 9W (BA19-08050OMF2)	Maintain Existing Controls			$0.00	B	$15.00	$75.00	
HQ	8	ground - mechanical	4	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$160.00	
HQ	8	ground - parking garage	23	CFL23CM	23W CFL in Ceiling Mounted Garage Fixtures	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	B	$255.00	$5,865.00	
HQ	8	ground - parking garage	6	IND200SM	200W Induction Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	B	$255.00	$1,530.00	
HQ	8	ground - parking garage	4	LED 80	No Change	No Change	Maintain Existing Controls			$0.00	B	$0.00	$0.00	

HQ	8	ground - parking garage	3	RC32	32W pin based CFL in Recessed Can	GE 18.5W Pin-Lamp (LED19GX24Q-V/840)	Maintain Existing Controls			$0.00	B	$30.00	$90.00	
HQ	8	ground - storage 1	4	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$160.00	
HQ	8	ground - storage 2	4	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$160.00	
HQ	8	ground - telephone room	1	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$40.00	$40.00	
HQ	8	ground - Server Room	8	F42RT14	(2) 4ft 32W T8 lamp in 1x4 Recessed Troffer Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	B	$48.00	$384.00	
HQ	7	elevator	1	F42RC	(2) 4ft 32W T8 lamp in Recessed Cove	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$45.00	$45.00	
HQ	7	stairs back	1	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$300.00	
HQ	7	stairs back	3	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$900.00	
HQ	7	1 - Autoshop compressor	2	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$500.00	
HQ	7	1 - autoshop office storage	4	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$1,200.00	
HQ	7	1 - auto shop	2	F82SM-T12	(2) 8ft 60W T12 lamps in Surface Mounted	Lithonia 34.9W (STL4-40L-EZB-LP840)	Maintain Existing Controls			$0.00	A	$500.00	$1,000.00	
HQ	7	1 - auto shop	8	IND285HB	285W Inductio High Bay Fixture	A DEC [illegible] LED 2-ES-40-UNV-F-DM-MS-CENTER BOX	Maintain Existing Controls			$0.00	A	$300.00	$2,400.00	
HQ	7	1 - auto shop op office	1	F42SM24	(2) 4ft 32W T8 lamp in 2x4 Surface Mounted Troffer Fixture	Lithonia 25W Troffer (2TL4-30L-XX-XXX-EZB-LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	B	$600.00	$600.00	
HQ	7	1 - electrical	3	F42P	(2) 4ft 32W T8 lamp in Pendant Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$750.00	
HQ	7	1 - electrical shop	5	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$1,250.00	
HQ	7	1 - electrical shop	2	CFL13	13W Screw-in CFL	CREE A19 LED, 9W (BA19-08050OMF2)	Maintain Existing Controls			$0.00	A	$15.00	$30.00	
HQ	7	1 - exterior	3	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$1,860.00	
HQ	7	1 - exterior	9	HPS150CM-Ext	150W HPS Canopy Fixture, Exterior	GE 35W Canopy (ECB-B-0-A5-F-5-40-1-A)	Maintain Existing Controls			$0.00	A	$400.00	$3,600.00	
HQ	7	1 - hallway	3	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$900.00	
HQ	7	1 - maintenance office	4	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	A	$240.00	$960.00	
HQ	7	1 - maintenance shop	8	F84SM-T12	(4) 8ft 60W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$2,000.00	
HQ	7	1 - maintenance shop	2	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$500.00	
HQ	7	1 - mens locker and restroom	6	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$1,500.00	
HQ	7	1 - mens locker and restroom	1	F41SM-T12	4ft 40W T12 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$35.00	
HQ	7	1 - mens locker and restroom	3	F41R-T12	4ft 40W T12 lamp in Recessed Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$105.00	
HQ	7	1 - meter shop	7	HPS35WP/2	(2) 35W HPS in Wallpack	GE 29W LED Wallpack (EWS2-0-A7-D1-40)	Maintain Existing Controls			$0.00	A	$400.00	$2,800.00	
HQ	7	1 - meter shop storage	4	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$1,000.00	
HQ	7	1 - office 5	1	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	A	$240.00	$240.00	
HQ	7	1 - office 5	1	F44RT44	(4) 4ft 28W T8 lamp in 4x4 Recessed Troffer Fixture	Lithonia 48W Troffer Retr Kit (2VTL4R 48L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$240.00	$240.00	
HQ	7	1 - sand blasting	4	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$1,000.00	
HQ	7	1 - shop hallway	3	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$900.00	
HQ	7	1 - warehouse	2	F44RT44	(4) 4ft 28W T8 lamp in 4x4 Recessed Troffer Fixture	Lithonia 48W Troffer Retr Kit (2VTL4R 48L ADP EZ1 LP840)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$240.00	$480.00	No Integrated Sensor option
HQ	7	1 - warehouse	24	F82P-T12HO	(2) 8ft 95W T12HO lamps in Pendant Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$7,200.00	
HQ	7	1 - warehouse	10	F41SM-T12	4ft 40W T12 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$350.00	
HQ	7	1 - warehouse	1	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$250.00	
HQ	7	1 - womens locker	2	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$500.00	
HQ	7	1 - womens locker	1	F41SM-T12	4ft 40W T12 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$35.00	
HQ	7	1 - womens locker	1	F31C-T12	3ft 30W T12 lamp in Indirect Cove Fixture	GE 13W 36" T8 LED tube type C (LED13T8/3/840)	Maintain Existing Controls			$0.00	A	$35.00	$35.00	
HQ	7	2 - auto shop boiler room	2	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$500.00	
HQ	7	2 - hallway	12	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	A	$240.00	$2,880.00	
HQ	7	2 - hallway	8	RC13	13W pin based CFL in Recessed Can	GE 12W Pin-Lamp (LED12G24Q-V/840)	Maintain Existing Controls			$0.00	A	$25.00	$200.00	
HQ	7	2 - janitor	1	CFL13	13W Screw-in CFL	CREE A19 LED, 9W (BA19-08050OMF2)	Maintain Existing Controls			$0.00	A	$15.00	$15.00	
HQ	7	2 - landing	1	HPS35WP/2-Ext	(2) 35W HPS in Wallpack	GE 29W LED Wallpack (EWS2-0-A7-D1-40)	Maintain Existing Controls			$0.00	A	$400.00	$400.00	
HQ	7	2 - mechanical room	5	F42P-T12	(2) 4ft 40W T12 lamps in Pendant Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$1,250.00	
HQ	7	2 - mens room	2	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$500.00	
HQ	7	2 - mens room	1	F41R-T12	4ft 40W T12 lamp in Recessed Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$35.00	
HQ	7	2 - mens room	1	RC13	13W pin based CFL in Recessed Can	GE 12W Pin-Lamp (LED12G24Q-V/840)	Maintain Existing Controls			$0.00	A	$25.00	$25.00	
HQ	7	2 - north room	3	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	A	$240.00	$720.00	
HQ	7	2 - office 1	3	F43RT24	(3) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$240.00	$720.00	
HQ	7	2 - office 2	3	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$750.00	
HQ	7	2 - office 3	3	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$240.00	$720.00	
HQ	7	2 - office 4	3	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$240.00	$720.00	
HQ	7	2 - office 6	3	F43RT24	(3) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$240.00	$720.00	
HQ	7	2 - operations	78	F42PA	(2) 4ft 32W T8 lamp in Pendant Array Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$45.00	$3,510.00	
HQ	7	2 - Server room	3	F43RT24	(3) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$240.00	$720.00	
HQ	7	2 - south room	3	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$750.00	
HQ	7	2 - south room	5	RC13/2	(2) 13W Pin Based CFL in Recessed Can Fixture	GE 12W Pin-Lamp (LED12G24Q-V/840)	Maintain Existing Controls			$0.00	A	$25.00	$125.00	
HQ	7	2 - staff lounge	9	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$260.00	$2,340.00	
HQ	7	2 - staff lounge	3	RC13/2	(2) 13W Pin Based CFL in Recessed Can Fixture	GE 12W Pin-Lamp (LED12G24Q-V/840)	Maintain Existing Controls			$0.00	A	$45.00	$135.00	
HQ	7	2 - womens room	2	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$500.00	
HQ	7	2 - womens room	1	F41R-T12	4ft 40W T12 lamp in Recessed Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$35.00	
HQ	7	2 - womens room	1	RC13	13W pin based CFL in Recessed Can	GE 12W Pin-Lamp (LED12G24Q-V/840)	Maintain Existing Controls			$0.00	A	$25.00	$25.00	
HQ	4	Exterior	2	INC60	60W Incandescent Screw-in Lamps	CREE A19 LED, 9W (BA19-08050OMF2)	Maintain Existing Controls			$0.00	A	$15.00	$30.00	
HQ	4	Vehicle Storage	17	F82P-T12	(2) 8ft 60W T12 lamps in Pendant Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$4,250.00	
HQ	Exterior	gas fill up	1	No Change	No Change	No Change	Maintain Existing Controls			$0.00	A	$0.00	$0.00	
HQ	Exterior	pumps	1	F42SM-Ext	(2) 4ft 32W T8 lamp in Surface Mounted Fixture, Exterior	Maxlite Vapor Tight 4ft Linear - 30W (15V4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$300.00	
HQ	Exterior	pumps	4	F42SM-Ext	(2) 4ft 32W T8 lamp in Surface Mounted Fixture, Exterior	Maxlite Vapor Tight 4ft Linear - 30W (15V4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$1,200.00	
HQ	Exterior	pumps	2	HPS150F	150W HPS Flood Light	Cree 46W Flood Light (FLD EDG N6 AA 04 E UL XX 350)	Maintain Existing Controls			$0.00	A	$580.00	$1,160.00	
HQ	Vehicle Wash Rack	pump room	1	F42SM-T12-Ext	(2) 4ft 30W T8 lamps in Surface Mounted Fixture, Exterior	Maxlite Vapor Tight 4ft Linear - 30W (15V4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$300.00	
HQ	Vehicle Wash Rack	Vehicle Wash Rack	8	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$4,960.00	
HQ	Vehicle Wash Rack	Vehicle Wash Rack	1	F42P-Ext	(2) 4ft 32W T8 lamp in Pendant Fixture, Exterior	Maxlite Vapor Tight 4ft Linear - 30W (15V4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$300.00	
										$0.00			$0.00	
Tapia	Admin	stairwell	4	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$1,200.00	
Tapia	Admin	stairwell	2	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$70.00	
Tapia	Admin	1 - breakroom	8	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	A	$240.00	$1,920.00	
Tapia	Admin	1 - hallway	2	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$600.00	
Tapia	Admin	1 - ice maker	1	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$35.00	
Tapia	Admin	1 - lab	4	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	A	$240.00	$960.00	
Tapia	Admin	1 - lab basement	12	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$3,000.00	
Tapia	Admin	1 - lab hallway	4	FU1RT	30W U-shape T8 Lamps in 2x2 Recessed Troffer	Lithonia 20W Troffer Retr Kit (2VTL2R 20L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	A	$210.00	$840.00	
Tapia	Admin	1 - lab locker room	2	CFL13	13W Screw-in CFL	CREE A19 LED, 9W (BA19-08050OMF2)	Maintain Existing Controls			$0.00	A	$15.00	$30.00	
Tapia	Admin	1 - lab locker room	6	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$1,800.00	
Tapia	Admin	1 - lab office	2	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	A	$240.00	$480.00	
Tapia	Admin	1 - lab small	1	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	A	$240.00	$240.00	
Tapia	Admin	1 - lab storage 1	1	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$35.00	
Tapia	Admin	1 - lab storage 2	1	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$35.00	
Tapia	Admin	1 - lab storage 3	1	F43SM	(3) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$250.00	
Tapia	Admin	1 - lab storage 3	1	INC60	60W Incandescent Screw-in Lamps	CREE A19 LED, 9W (BA19-08050OMF2)	Maintain Existing Controls			$0.00	A	$15.00	$15.00	
Tapia	Admin	1 - large lab 1	12	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	B	$240.00	$2,880.00	
Tapia	Admin	1 - large lab 2	12	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	B	$240.00	$2,880.00	
Tapia	Admin	1 - lobby	4	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	NO CHANGE	Maintain Existing Controls			$0.00	A	$0.00	$0.00	
Tapia	Admin	1 - lobby	10	BR65	65W Incandescent BR30 Lamp	CREE 9W BR30 LED (BBR30-06527FLF-12DE26-4U100)	Maintain Existing Controls			$0.00	A	$35.00	$350.00	
Tapia	Admin	1 - lobby	4	RC13	13W pin based CFL in Recessed Can	GE 12W Pin-Lamp (LED12G24Q-V/840)	Maintain Existing Controls			$0.00	A	$25.00	$100.00	
Tapia	Admin	1 - lobby	3	LED20RC	No Change	No Change	Maintain Existing Controls			$0.00	A	$0.00	$0.00	
Tapia	Admin	1 - mechanical	2	CFL18	18W Screw-in CFL	CREE A19 LED, 13.5W (BA19-11050OMF)	Maintain Existing Controls			$0.00	A	$20.00	$40.00	
Tapia	Admin	1 - mechanical	10	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$350.00	
Tapia	Admin	1 - medium lab	3	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	A	$260.00	$780.00	
Tapia	Admin	1 - mens locker rr	7	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	2		$0.00	A	$300.00	$2,100.00	
Tapia	Admin	1 - mens locker rr	2	CFL13RS	13W Screw-in CFL in Recessed Square	CREE A19 LED, 9W (BA19-08050OMF2)	Maintain Existing Controls			$0.00	A	$20.00	$40.00	
Tapia	Admin	1 - mens rr	2	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$500.00	
Tapia	Admin	1 - microbio lab	4	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	A	$260.00	$1,040.00	
Tapia	Admin	2 - conference	6	F43RT24	(3) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$260.00	$1,560.00	
Tapia	Admin	2 - conference	6	BR65	65W Incandescent BR30 Lamp	CREE 9W BR30 LED (BBR30-06527FLF-12DE26-4U100)	Maintain Existing Controls			$0.00	A	$35.00	$210.00	
Tapia	Admin	2 - conference	8	CFL13	13W Screw-in CFL	CREE A19 LED, 9W (BA19-08050OMF2)	Maintain Existing Controls			$0.00	A	$20.00	$160.00	
Tapia	Admin	2 - control room	1	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	A	$240.00	$240.00	
Tapia	Admin	2 - control room	4	F42RT24	(2) 4ft 32W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$240.00	$960.00	
Tapia	Admin	2 - exterior	5	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$3,100.00	
Tapia	Admin	2 - exterior	6	F42VT-Ext	(2) 4ft 32W T8 lamp in Vapor Tight Fixture, Exterior	Maxlite Vapor Tight 4ft Linear - 30W (15V4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$1,800.00	
Tapia	Admin	2 - exterior	2	BR55	55W Incandescent BR30 Lamp	CREE 9W BR30 LED (BBR30-06527FLF-12DE26-4U100)	Maintain Existing Controls			$0.00	A	$35.00	$70.00	

Tapia	Admin	2 - exterior	18	HPS70B	No Change	No Change	Maintain Existing Controls			$0.00	A	$0.00	$0.00
Tapia	Admin	2 - file room	8	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$240.00	$1,920.00
Tapia	Admin	2 - office 1	2	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	A	$240.00	$480.00
Tapia	Admin	2 - office 2	2	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	A	$240.00	$480.00
Tapia	Admin	2 - office 3	2	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	A	$240.00	$480.00
Tapia	Admin	2 - office 4	2	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Wall Mounted Occupancy Sensor	1	$120.00	$120.00	A	$240.00	$480.00
Tapia	Admin	2 - open offices	8	F44RT24	(4) 4ft 28W T8 lamp in 2x4 Recessed Troffer Fixture	Lithonia 38W Troffer Retr Kit (2VTL4R 40L ADP EZ1 LP840)	Ceiling Mounted Occupancy Sensor	1	$250.00	$250.00	A	$240.00	$1,920.00
Tapia	Admin	2 - open offices	2	FU2RT	(2) 30W U-shape T8 Lamps in 2x2 Recessed Troffer	Lithonia 20W Troffer Retr Kit (2VTL2R 20L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$210.00	$420.00
Tapia	Admin	2 - server	2	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$70.00
Tapia	Admin	2 - womens rr	1	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$250.00
Tapia	Exterior	Exterior	2	H100F	100W Halogen Flood Light	Cree 25W Flood Light (FLD EDG N6 AA 02 E UL XX 350)	Maintain Existing Controls			$0.00	A	$580.00	$1,160.00
Tapia	Exterior	Exterior	12	HPS250SB	250W HPS Shoebox Fixture	Cree 101W LED Cobrahead (BXSPCHT3MEA40K-Uxxxx)	Maintain Existing Controls			$0.00	A	$600.00	$7,200.00
Tapia	Exterior	secondary sedimentation	2	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$1,240.00
Tapia	Exterior	secondary sedimentation	30	HPS250SB/2	(2) 250W HPS Shoebox Fixture on Pole	Cree 101W LED Cobrahead (BXSPCHT3MEA40K-Uxxxx)	Maintain Existing Controls			$0.00	A	$600.00	$18,000.00
Tapia	Maint Shop	exterior	8	F42VT-T12-Ext	(2) 4ft 30W T8 lamps in Vapor Tight Fixture, Exterior	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$2,400.00
Tapia	Maint Shop	exterior	12	F42VT-T12-Ext	(2) 4ft 30W T8 lamps in Vapor Tight Fixture, Exterior	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$3,600.00
Tapia	Maint Shop	interior	50	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$12,500.00
Tapia	air comp	air comp 1	10	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$3,000.00
Tapia	air comp	air comp 2	10	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$3,000.00
Tapia	air comp	air comp 3	10	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$3,000.00
Tapia	Misc-Ext	balancing pond	2	MV175SB	175W MH Shoebox Fixture	Cree 41W LED Cobrahead (RSWS-A-HT-3MEL-SL-40K7-UL-GY	Maintain Existing Controls			$0.00	A	$300.00	$600.00
Tapia	Misc-Ext	carbon towers	5	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$3,100.00
Tapia	chem storage	chem storage	22	CFL18	18W Screw-in CFL	CREE A19 LED, 13.5W (BA19-11050OMF)	Maintain Existing Controls			$0.00	A	$15.00	$330.00
Tapia	chem storage	chem storage	3	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$900.00
Tapia	chemical building	chemical building	14	F44SM-T12	(4) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$3,500.00
Tapia	chemical building	chemical building	6	F44SM-T12	(4) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$1,500.00
Tapia	chemical building	chemical building electrical	4	F42P-T12	(2) 4ft 40W T12 lamps in Pendant Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$1,000.00
Tapia	Misc-Ext	chemical building exterior	8	LED28	No Change	No Change	Maintain Existing Controls			$0.00	A	$0.00	$0.00
Tapia	Misc-Ext	chemical building exterior	2	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$1,240.00
Tapia	chemical building	chemical building office	5	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$1,500.00
Tapia	cp100	cp100	15	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$4,500.00
Tapia	cp100	cp100 pipe galley and blowers	44	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$13,200.00
Tapia	cp700	cp700	13	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$3,250.00
Tapia	cp800	cp800	14	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$3,500.00
Tapia	effluent station	effluent station	16	F42SM-28	(2) 4ft 28W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$4,000.00
Tapia	Misc-Ext	effluent station exterior	2	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$1,240.00
Tapia	filter building	filter building	6	F42SM-T12HO	(2) 4ft 60W T12HO lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$1,500.00
Tapia	filter building	filter building	40	F42SM-28	(2) 4ft 28W T8 lamp in Surface and pendant Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$10,000.00
Tapia	Misc-Ext	filter building	1	INC75	60W Incandescent Screw-in Lamps	CREE A19 LED, 13.5W (BA19-11050OMF)	Maintain Existing Controls			$0.00	A	$20.00	$20.00
Tapia	Misc-Ext	filters	13	HPS150SB	150W HPS Shoebox Fixture	[illegible]	Maintain Existing Controls			$0.00	A	$750.00	$9,750.00
Tapia	Misc-Ext	filters	12	H500F	500W Halogen Flood Light	Cree 46W Flood Light (FLD EDG N6 AA 04 E UL XX 350)	Maintain Existing Controls			$0.00	A	$580.00	$6,960.00
Tapia	force main 1	force main 1	5	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$1,500.00
Tapia	force main 1	force main 1	17	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$4,250.00
Tapia	Misc-Ext	force main 1 exterior	2	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$1,240.00
Tapia	force main 2	force main 2	15	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$3,750.00
Tapia	force main 2	force main 2	7	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$1,750.00
Tapia	Misc-Ext	force main 2 exterior	2	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$1,240.00
Tapia	generators	generators 1	15	F42P-T12	(2) 4ft 40W T12 lamps in Pendant Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$3,750.00
Tapia	generators	generators 3	14	F42P-T12	(2) 4ft 40W T12 lamps in Pendant Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$3,500.00
Tapia	generators	generators 3 elec	6	F42P-T12	(2) 4ft 40W T12 lamps in Pendant Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$1,500.00
Tapia	Misc-Ext	generators exterior	7	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$4,340.00
Tapia	Misc-Ext	generators exterior	10	H500F	500W Halogen Flood Light	Cree 46W Flood Light (FLD EDG N6 AA 04 E UL XX 350)	Maintain Existing Controls			$0.00	A	$580.00	$5,800.00
Tapia	Misc-Ext	gritwell	9	INC75	60W Incandescent Screw-in Lamps	CREE A19 LED, 13.5W (BA19-11050OMF)	Maintain Existing Controls			$0.00	A	$20.00	$180.00
Tapia	Misc-Ext	gritwell	28	MH70LB-VT	70W Metal Halide Low Bay, Vapor Tigh Fixture	Cooper Champ 43W VMV Class 1 Div 2 LED (VMV5L/UNV1)	Maintain Existing Controls			$0.00	A	$800.00	$22,400.00
Tapia	headworks	headworks	10	IND85WP	85W Induction Wallpack	Holophane HPLED-42-350-4L-AS-US-G-L1-45C	Maintain Existing Controls			$0.00	A	$750.00	$7,500.00
Tapia	Misc-Ext	headworks exterior	6	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$3,720.00
Tapia	influent	influent	16	F42PVT	(2) 4ft 32W T8 lamp in Vaportight Pendant Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$250.00	$4,000.00
Tapia	influent	influent - stairwell	6	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$250.00	$1,500.00
Tapia	influent	influent pumping	13	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$250.00	$3,250.00
Tapia	influent	influent pumping	4	CFL18	18W Screw-in CFL	CREE A19 LED, 13.5W (BA19-11050OMF)	Maintain Existing Controls			$0.00	A	$20.00	$80.00
Tapia	light truck garage	light truck garage	48	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$12,000.00
Tapia	Misc-Ext	light truck garage exterior	7	RC26-Ext	26W CFL IN Recessed Can Fixture, Exterior	RAB BRISK12NW	Maintain Existing Controls			$0.00	A	$150.00	$1,050.00
Tapia	old belt press - Leave Out	old belt press	25	No Change	No Change	No Change	Maintain Existing Controls			$0.00	A	$0.00	$0.00
Tapia	Misc-Ext	old belt press exterior	3	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$1,860.00
Tapia	Misc-Ext	pipe galley	22	INC75	60W Incandescent Screw-in Lamps	CREE A19 LED, 13.5W (BA19-11050OMF)	Maintain Existing Controls			$0.00	A	$20.00	$440.00
Tapia	Misc-Ext	pipe galley	3	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$1,860.00
Tapia	Misc-Ext	primary tanks	12	HPS250SB/2-240V	(2) 250W HPS Shoebox Fixture on Pole, 240V	Cree 76W LED Cobrahead (RSWM-A-HT-3ML-9L-40K7-UL-GY)	Maintain Existing Controls			$0.00	A	$350.00	$4,200.00
Tapia	Misc-Ext	primary tanks	1	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$620.00
Tapia	process air	process air	12	F42SM-T12	(2) 4ft 40W T12 lamps in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Maintain Existing Controls			$0.00	A	$250.00	$3,000.00
Tapia	Misc-Ext	ras basins	4	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$2,480.00
Tapia	secondary	secondary	16	F42VT	(2) 4ft 32W T8 lamp in Vaportight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$4,800.00
Tapia	Misc-Ext	secondary exterior	32	HPS250SB	250W HPS Shoebox Fixture	Cree 101W LED Cobrahead (BXSPCHT3MEA40K-Uxxxx)	Maintain Existing Controls			$0.00	A	$600.00	$19,200.00
Tapia	Misc-Ext	secondary exterior	4	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$2,480.00
Tapia	sludge screening	sludge screening	8	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$250.00	$2,000.00
Tapia	Misc-Ext	sludge screening exterior	2	HPS250WP	250W HPS Wallpack	GE 91W LED Wallpack (EWS2-0-E3-E1-40)	Maintain Existing Controls			$0.00	A	$620.00	$1,240.00
Tapia	Misc-Ext	substation	2	HPS150SB	150W HPS Shoebox Fixture	Cree 41W LED Cobrahead (RSWS-A-HT-3MEL-SL-40K7-UL-GY	Maintain Existing Controls			$0.00	A	$300.00	$600.00
Tapia	Misc-Ext	substation	7	INC75	60W Incandescent Screw-in Lamps	CREE A19 LED, 13.5W (BA19-11050OMF)	Maintain Existing Controls			$0.00	A	$20.00	$140.00
Tapia	Misc-Ext	upper digesters	8	HPS250SB/2	(2) 250W HPS Shoebox Fixture on Pole	Cree 76W LED Cobrahead (RSWM-A-HT-3ML-9L-40K7-UL-GY)	Maintain Existing Controls			$0.00	A	$350.00	$2,800.00
Tapia	Warehouse-Ext	exterior	8	F42VT-T12-Ext	(2) 4ft 30W T8 lamps in Vapor Tight Fixture, Exterior	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$250.00	$2,000.00
Tapia	Warehouse-Ext	exterior	1	RC26-Ext	26W CFL IN Recessed Can Fixture, Exterior	CREE CR6, 12W (CR6-800L-40K)	Maintain Existing Controls			$0.00	A	$120.00	$120.00
Tapia	Warehouse	warehouse	24	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$7,200.00
Tapia	Warehouse	welding shop	2	F42VT-T12	(2) 4ft 40W T12 lamps in Vapor Tight Fixture	Maxlite Vapor Tight 4ft Linear - 30W (LSV4806SU30DV40MS)	Maintain Existing Controls			$0.00	A	$300.00	$600.00
Tapia	Admin	1 - mens locker rr	1	F41SM	4ft 32W T8 lamp in Surface Mounted Fixture	GE 13W 48" T8 LED tube type C (LED15T8/4/840)	Maintain Existing Controls			$0.00	A	$35.00	$35.00
Tapia	Admin	2 - file room	2	FU2RT	(2) 30W U-shape T8 Lamps in 2x2 Recessed Troffer	Lithonia 20W Troffer Retr Kit (2VTL2R 20L ADP EZ1 LP840)	Maintain Existing Controls			$0.00	A	$210.00	$420.00
Tapia	Admin	1 - mens locker rr	1	F42SM	(2) 4ft 32W T8 lamp in Surface Mounted Fixture	Lithonia 32W Striplight (ZL1N-L48-3000LM-FST-MVOLT-40K-XX)	Fixture Integrated Occupancy Sensor	0		$0.00	A	$300.00	$300.00
Tapia	Admin	1 - mens locker rr	1	INC75	60W Incandescent Screw-in Lamps	CREE A19 LED, 13.5W (BA19-11050OMF)	Maintain Existing Controls			$0.00	A	$20.00	$20.00
									Control Total =	$7,110.00		Lighting Total =	$434,506.00

Construction schedule A: work to be performed within normal work schedule of District 7:30 to 5:00 Monday through Friday except for District Holidays stated in the District Website: WWW.LVMWD.com
Construction schedule B: Work to be performed outside of normal work schedule of District 7:30 to 5:00 Monday through Friday except for District Holidays stated in the District Website: WWW.LVMWD.com

Grand Total = Control Total Plus Lighting Total = $441,616.00

RECENT PROJECT EXPERIENCE- RETRO-TEK ENERGY SERVICES, INC.

PROJECT NAME: DISTRICTWIDE PROP 39 LIGHTING RETROFIT- PHASE 2

LOCATION: 211 W FIFTH STREET, ONTARIO, CA 91762

OWNER: CHAFFEY JOINT UNION HIGH SCHOOL DISTRICT

OWNER CONTACT: MIKE WEAVER, PMP Office- (909) 988-8511 Cell- (909) 952-2868

PROJECT COST: $880,000.00

PROJECT COMPLETION: 03/27/2017

PROJECT DESCRIPTION: Complete LED Lighting Retrofit at Montclair, Alta Loma and Valley View High Schools. Retrofit 6,000 fixtures, installed 500 new exterior fixtures and 400 new occupancy sensors.

PROJECT NAME: ABC 1474 Installation of LED Lighting at Five Schools

LOCATION: STOWERS, LEAL, PALMS, ALOHA and HAWAIIAN ELEMENTARY SCHOOL

OWNER: ABC UNIFIED SCHOOL DISTRICT

OWNER CONTACT: ROBERT KAY, PM Office (562) 926-5566 ex 22455 Cell (562) 254-5031

PROJECT COST: $429,890.00

PROJECT COMPLETION: 01/01/2017

PROJECT DESCRIPTION: Completed LED Lighting Retrofit at 5 elementary Schools. Interior and Exterior Lighting Retrofit. Installed Occupancy sensors.

PROJECT NAME: DISTRICTWIDE LIGHTING RETROFIT- CN-439

LOCATION: VARIOUS HIGH SCHOOLS

OWNER: GROSSMONT UNION HIGH SCHOOL DISTRICT

OWNER CONTACT: TED BRAY, ERICKSON-HALL PMP Office (760) 796-7700 Cell (760) 801-3641

PROJECT COST: $1,900,000.00

PROJECT COMPLETION: 08/15/2016

PROJECT DESCRIPTION: Completed LED Lighting Retrofit and Re-lamp at 10 High Schools. Installed 4,000 Philips EVO Kits with Spacewise and installed over 2,000 new exterior and parking lot LED fixtures.

PROJECT NAME: DISTRICTWIDE PROP 39 LIGHTING RETROFIT- PHASE 1

LOCATION: 211 W FIFTH STREET, ONTARIO, CA 91762

OWNER: CHAFFEY JOINT UNION HIGH SCHOOL DISTRICT

OWNER CONTACT: MIKE WEAVER, PMP Office- (909) 988-8511 Cell- (909) 952-2868

PROJECT COST: $1,156,000.00

PROJECT COMPLETION: 05/27/2016

PROJECT DESCRIPTION: Complete LED Lighting Retrofit at Chaffey and Etiwanda High Schools. Retrofit Over 8,000 fixtures, installed over 300 exterior fixtures and 500 occupancy sensors.

PROJECT NAME: BIG BLUE BUS LIGHTING UPGRADE- 5P2350

LOCATION: 601 W OLYMPIC BLVD., SANTA MONICA, CA 90401

OWNER: CITY OF SANTA MONICA

OWNER CONTACT: SEBASTIAN FELBECK, PMP Office (310) 458-2205 x 2336 Cell- (310) 741-2488

PROJECT COST: $524,375.00

PROJECT COMPLETION: 01/10/2016

PROJECT DESCRIPTION: Installed over 500 new LED fixtures throughout the facility. Installed DECO Pole lights and Holophane Explosion proof fixture in fueling Station.

PROJECT NAME: RIO HONDO COMMUNITY COLLEGE PROP 39 LIGHTING UPGRADE Y1-3

LOCATION: 3600 WORKMAN MILL ROAD, WHITTIER, CA 90601

OWNER: RIO HONDO COMMUNITY COLLEGE DISTRICT

OWNER CONTACT: JIM POPER, FACILITIES DIRECTOR, O (562) 926-5566 x 22414 C (562) 686-6784

PROJECT COST: $1,200,000.00

PROJECT COMPLETION: 06/30/2015

PROJECT DESCRIPTION: Installed 250 new LED Parking Lot and Roadway Lights. Installed 7,000 new Linmore LED Light Bar Retrofit Kits in Arts/Business, Science, Fire Academy and Administration Buildings

Note: Jim Poper has changed jobs and now works for ABC USD. The numbers listed above are current.

PROJECT NAME: PERALTA COMMUNTIY COLLEGE DISTRICT-WIDE PROP 39 LED LIGHTING PROJECT

LOCATION: LANEY COLLEGE, MERRITT COLLEGE, COLLOGE OF ALAMEDA & DISTRICT OFFICES

OWNER: PERALTA COMMUNTIY COLLEGE DISTRICT

OWNER CONTACT: CHARLES NEAL PCCD, Office-(510) 587-7894 Cell-(503) 888-7168

PROJECT COST: $568,650.00

PROJECT COMPLETION: 06/13/2014

PROJECT DESCRIPTION: Installed over 900 Exterior LED lighting fixtures at 3 campus and District Office. Work included all Parking Lots and Roadways and some exterior building and pathway lights.

PROJECT NAME: SEP2013 LIGHTING UPGRADE- UC IRVINE STUDENT CENTER

LOCATION: UNIVERSITY OF CALIFORNIA- IRVINE STUDENT CENTER

OWNER: THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

OWNER CONTACT: JOSEPH FLESHMAN UCI FACILITIES PM, Office-(949) 824-7022 Cell-(949) 769-4617

PROJECT COST: $576,900.00

PROJECT COMPLETION: 01/16/2015

PROJECT DESCRIPTION: Installed 1,500 new 2x4 LED troffer fixtures, installed over 800 4' LED Light Bar Kits and installed 300 occupancy sensors throughout the UC Irvine- Student Center.

PROJECT NAME: HONEYWELL/ JPL NASA LIGHTING PROJECTS- MOD "E-F"

LOCATION: JET PROPULSION LABORATORY 4800 OAK GROVE DRIVE, LA CANADA FLINTRIDGE, CA 91011

OWNER: HONEYWELL BUILDING SOLUTIONS/NASA

OWNER CONTACT: Craig Hall, P.M.P. Office- (626) 808-0376 Cell-(949) 204-4578

PROJECT COST: $1,332,000.00

PROJECT COMPLETION: 03/15/2014

PROJECT DESCRIPTION: Retrofit over 13,000 interior light fixtures. Installed over 400 LED Exterior light fixtures. Installed over 300 new interior light fixtures and occupancy sensors.

Visit www.retrotekes.com to see more completed projects.

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 7/17/2017

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Stephanie Zuniga	
Alta Vista Insurance Agency PO Box 1480 Vista CA 92805	PHONE (A/C, No, Ext): 760-724-2124	FAX (A/C, No): 760-630-1597
	E-MAIL ADDRESS: stephanie@altavistainsurance.com	

INSURED	INSURER(S) AFFORDING COVERAGE	NAIC #
RETRO-TEK ENERGY SERVICES, INC 269 WOODLAND DR VISTA CA 92083-7673	INSURER A: Mesa Underwriters Specialty Insurance Company	36838
	INSURER B: Kemper Specialty	10914
	INSURER C: National Union Fire Ins. Co. of Pittsburgh, PA.	19445
	INSURER D: Starstone National Insurance Company	25496
	INSURER E:	
	INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	[X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [ ] PRO-JECT [ ] LOC [ ] OTHER:	Y		MP0004014000755	04/23/2017	04/23/2018	EACH OCCURRENCE	$ 1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 100,000
							MED EXP (Any one person)	$ 5,000
							PERSONAL & ADV INJURY	$ 1,000,000
							GENERAL AGGREGATE	$ 2,000,000
							PRODUCTS - COMP/OP AGG	$ 2,000,000
								$
B	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY			380618602	04/23/2017	04/23/2018	COMBINED SINGLE LIMIT (Ea accident)	$ 1000000
							BODILY INJURY (Per person)	$
							BODILY INJURY (Per accident)	$
							PROPERTY DAMAGE (Per accident)	$
								$
C	[ ] UMBRELLA LIAB [X] OCCUR [X] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $			EBU051130816	04/23/2017	04/23/2018	EACH OCCURRENCE	$ 2,000,000
							AGGREGATE	$ 2,000,000
								$
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N [ ] (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		T20170579	04/01/2017	04/01/2018	[X] PER STATUTE [ ] OTH-ER	
							E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Stephanie Zuniga