LAS VIRGENES - TRIUNFO
JOINT POWERS AUTHORITY
AGENDA

4232 Las Virgenes Road, Calabasas, CA 91302

Members of the public wishing to address the Las Virgenes-Triunfo Joint Powers Authority (JPA) Board of Directors are advised that a statement of Public Comment Protocols is available from the Clerk of the Board. Prior to speaking, each speaker is asked to review these protocols, complete a speakers' card, and hand it to the Clerk of the Board. Speakers will be recognized in the order the cards are received.

The Public Comments agenda item is presented to allow the public to address the Board on matters not on the agenda. The public may also present comments on matters on the agenda; speakers for agendized items will be recognized at the time the item is called up for discussion.

Materials prepared by the JPA in connection with the subject matter on the agenda are available for public inspection at 4232 Las Virgenes Road, Calabasas, CA 91302. Materials prepared by the JPA and distributed to the Board during this meeting are available for public inspection at the meeting or as soon thereafter as possible. Materials presented to the Board by the public will be maintained as part of the records of these proceedings and are available upon request to the Clerk of the Board.

5:00 PM November 5, 2018

PLEDGE OF ALLEGIANCE

1 CALL TO ORDER AND ROLL CALL

2 CHAIR/VICE CHAIR

A Welcome TSD Director Leon E. Shapiro to JPA Board of Directors (Pg. 4)

3 APPROVAL OF AGENDA

4 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

5 CONSENT CALENDAR

Matters listed under the Consent Calendar are considered to be routine, non-controversial and normally approved with one motion. If discussion is requested by a member of the Board on any Consent Calendar item, or if a member of the public wishes to comment on an item, that item will be removed from the Consent Calendar for separate action.

A Minutes: Regular Meeting of October 1, 2018 (Pg. 5)

Approve.

6 ILLUSTRATIVE AND/OR VERBAL PRESENTATION AGENDA ITEMS

A Pure Water Project Las Virgenes-Triunfo: Update (Pg. 12)

B Pure Water Project Las Virgenes-Triunfo: Title XVI Feasibility Study (Pg. 14)

C Financial Review: First Quarter of Fiscal Year 2018-19 (Pg. 57)

Receive and file the financial review for the first quarter of Fiscal Year 2018-19.

7 ACTION ITEMS

A 2019 JPA Board Meeting Calendar (Pg. 66)

Review the 2019 JPA Board Meeting Calendar and make any scheduling adjustments.

B Rancho Lighting Efficiency Upgrade Project: Approve Incentive Agreement with Onsite Energy (Pg. 69)

Authorize the Administrating Agent/General Manager to execute an LCR Customer Incentive Agreement with Onsite Energy for the Rancho Lighting Efficiency Upgrade Project.

C Tapia Process Air Improvements Project: Pre-Purchase of Blowers and Diffusers and Issuance of New Call for Bids (Pg. 75)

Accept the bids from Sulzer Pump Solutions (US) Inc. and OTT North America; authorize the Administrating Agent/General Manager to issue purchase orders, respectively, in the amount of $837,769.75, for the purchase of high speed turbo blowers and equipment and, in the amount of $336,291.75, for the purchase of the retrievable fine bubble aeration system equipment; authorize the General Manager to approve a change of scope to Pacific Advanced Civil Engineering (PACE), in the amount of $24,640, to revised the plans and specifications and provide additional bidding services; and authorize a new Call for Bids based on the revised bid package for the Tapia Process Air Improvements Project.

8 BOARD COMMENTS

9 ADMINISTERING AGENT/GENERAL MANAGER REPORT

10 FUTURE AGENDA ITEMS

11 INFORMATION ITEMS

A State and Federal Legislative Update (Pg. 126)

B Rancho Digester No. 2 Cleaning: Call for Bids (Pg. 140)

C Tapia SCADA System Upgrade: Award of Scoping Services Proposal (Pg. 145)

D Tapia Water Reclamation Facility Chloride Study: Identification of Options Report (Pg. 147)

12 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

13 CLOSED SESSION

14 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.

TRIUNFO SANITATION DISTRICT
A PUBLIC AGENCY

NEWS RELEASE

CONTACT:
Mr. Sandy Warren
Public Affairs
805-658-4608 / 818-400-9278 (cell)
sandywarren@triunfosanitation.com

Leon Shapiro Appointed to Triunfo Sanitation District Board of Directors

VENTURA, Calif., Oct. 26 – Leon Shapiro, a consultant in the water and wastewater treatment industry, has been appointed as a Director of the Triunfo Sanitation District, filling the vacancy created by Michael Paule's resignation on August 31, 2018. Shapiro, a resident of Oak Park, took the oath of office at a special meeting of the Triunfo Sanitation District Board on Thursday evening, October 25. He was one of three applicants who were interviewed by the Board for the position.

Janna Orkney, District Board Chairman, stated, "I am so pleased that Triunfo Sanitation District has such a competent and knowledgeable new Board member. Leon will be a great asset to the District as we work to meet the challenges and opportunities ahead, including our Pure Water Project partnership with Las Virgenes Municipal Water District."

In addition to Orkney, Directors Susan Pan, Raymond Tjulander, and James Wall participated in the interview and appointment process. Triunfo Sanitation District Board members are elected at large and serve staggered four-year terms – Shapiro will serve out Michael Paule's term through December 2020.

Commenting on his appointment, Shapiro said, "I am proud to be the newest board member of the Triunfo Sanitation District. The real solutions to our State's water crisis are to be found at the local level. TSD has long been a progressive leader amongst California's water agencies, pioneering wastewater recycling and compost production from the 1970s. I look forward to bringing my years of experience in the water and wastewater treatment industry, along with my passion for the environment, to assist the District as it moves into the future as an effective steward of our water resources."

Shapiro is president of 21st Century Water Solutions, a consultancy focused on California's water supply and wastewater treatment industry. His work has included advising capital investors seeking to enter the water treatment market on key trends and technologies, and consulting with non-profit organizations on state and federal water use policies to help them develop campaigns to promote greater water conservation and reuse. Shapiro received a Bachelor of Arts degree from the University of Illinois and a law degree from the Illinois Institute of Technology – Chicago/Kent College of Law.

About TSD
Triunfo Sanitation District provides sewage collection services and wastewater treatment, supplies potable water, and treats and sells recycled water in the southeastern portion of Ventura County. The District covers approximately 50 square miles and serves a population in excess of 30,000. For additional information, visit www.triunfosanitation.com.

# # #

LAS VIRGENES – TRIUNFO
JOINT POWERS AUTHORITY
MINUTES
REGULAR MEETING

5:00 PM October 1, 2018

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance to the Flag was led by Doug Anders.

1. CALL TO ORDER AND ROLL CALL

The meeting was called to order at **5:00 p.m.** by Chair Peterson 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, Orkney, Pan, Peterson, Polan, Renger, Tjulander, and Wall
Absent: Director Lewitt

2. APPROVAL OF AGENDA

Administering Agent/General Manager David Pedersen requested that Item 12A be removed as there was no update.

Director Caspary moved to approve the agenda as amended with the removal of Item 12A. Motion seconded by Director Renger. Motion carried by the following vote:

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

3. PUBLIC COMMENTS

Lynda Lo-Hill noted that staff recently provided her a tour of the Tapia Water Reclamation Facility. She inquired regarding the reason the JPA selected indirect potable reuse versus direct potable reuse for the Pure Water Project Las Virgenes-Triunfo (Pure Water Project). She also inquired regarding the reason

the "do nothing" option was not selected. She noted that the Basis of Design Report indicated two percent projected inflation and three percent interest rate for a three-year period, and she expressed concern that the three percent baseline discount rate appeared to be low. She also noted that a $5 million debt financing per year would equate to $300 per customer per year.

Chair Peterson asked staff to address Ms. Lo-Hill's questions at the next Pure Water Project update.

4. CONSENT CALENDAR

A Minutes: Regular Meeting of September 4, 2018

Director Caspary moved to approve the Consent Calendar. Motion seconded by Director Tjulander. Motion carried by the following vote:

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

5. ILLUSTRATIVE AND/OR VERBAL PRESENTATION AGENDA ITEMS

A LVMWD 60th Anniversary Recognition of Partner in Service: Triunfo Sanitation District

Mike McNutt, Public Affairs and Communications Manager, shared the history of Las Virgenes Municipal Water District's partnership with Triunfo Sanitation District as the Las Virgenes-Triunfo Joint Powers Authority.

The Board members from Las Virgenes Municipal Water District and Triunfo Sanitation District shared their comments regarding working together as a Joint Powers Authority.

The Board members from Las Virgenes Municipal Water District presented the 60th Anniversary Recognition of Partner in Service Award to the Board members of Triunfo Sanitation District.

B Pure Water Project Las Virgenes-Triunfo: Update

Administering Agent/General Manager David Pedersen suggested the JPA Board hold special workshops on a periodic basis to address challenging issues and receive briefings on all elements of the project.

Demonstration Project: Work continues on preparation of the 60 percent plans and specifications for the Pure Water Demonstration Project. Staff anticipates holding

a workshop at the December 3rd JPA Board meeting to present the 60 percent design and share concepts on the visitor experience for the project.

Funding and Financing: Work is nearing completion for the Title XVI Feasibility Study. A copy was sent to the U.S. Bureau of Reclamation for review and comment, and staff received notice earlier in the day that the study was approved with no comment. This will allow the JPA to compete for Title XVI construction funding once the approval is officially issued.

Institutional Issues: Staff met with representatives from the City of Thousand Oaks and Calleguas Municipal Water District (Calleguas) on September 16th to discuss brine disposal and mutual benefits. Calleguas has much invested in its salinity management pipeline and eager to be a service provider to those who need to dispose of brine. Calleguas General Manager Susan Mulligan expressed interest in potentially meeting the JPA partway on the brine pipeline. The City of Thousand Oaks has plans to build a series of desalters to treat impaired groundwater in the city and will need to dispose of brine as part of that effort. The City is interested in working with the JPA on an alignment that would work for the JPA and the City. The group also discussed conducting a high level study to look at goals and objectives. Staff will bring back a recommendation on such a study, including potential cost sharing among the JPA, City of Thousand Oaks, and Calleguas.

Chair Peterson requested a funding and financing update at the next JPA Board meeting.

6. ACTION ITEMS

A Tapia Process Air Improvements Project: Reject All Bids

Reject all bids for the Tapia Process Air Improvements Project.

Administering Agent/General Manager David Pedersen presented the report.

Director Polan moved to approve Item 6A. Motion seconded by Director Renger.

Administering Agent/General Manager David Pedersen responded to questions regarding the 10.5 percent markup savings for pre-purchasing the equipment and the increase in costs due the recently imposed tariffs for materials associated with the diffusers.

Director Tjulander suggested the electrical contractors conduct a walk through as recommended by staff and that they meet with internal engineering staff to compare the Engineer's Estimate to the electrical contractors' estimate.

Motion carried by the following vote:

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

B Pure Water Demonstration Project: Equipment Purchase

Accept the bids from H2O Innovations and Wylem Wedeco, and authorize the Administering Agent/General Manager to issue purchase orders, respectively, in the amount of $498,563 plus applicable taxes, for the purchase of ultra-filtration and reverse osmosis equipment and, in the amount of $136,000 plus applicable taxes, for the purchase of the ultra-violet light disinfection equipment for the Pure Water Demonstration Project.

Administering Agent/General Manager David Pedersen presented the report.

Director Tjulander moved to approve Item 6B. Motion seconded by Director Renger.

Adam Zacheis, representing Carollo Engineers, responded to a question regarding the DC Tillman Ground Water Replenishment Advanced Water Purification Facility Pilot Program, and the City's experience using the ultra-filtration and reverse osmosis equipment by stating that he believed the majority of the pilot testing was completed and ran for one year. Administering Agent/General Manager David Pedersen added that staff could contact the City of Los Angeles for more information regarding their experience using this equipment.

Mr. Zacheis responded to a question regarding the handling of chemicals for the backwash by stating that the chemicals used for cleaning the processes are typically neutralized before being sent to the sanitary sewer. Administering Agent/General Manager David Pedersen added that the facility would have a series of tanks, and the cleaned chemicals would be stored after they are used in the tank so that they may be neutralized and have the pH tested before the chemicals are discharged to the sewer.

Mr. Zacheis responded to a question regarding operating the pilot at a feed flow rate between 100 and 150 gpm by stating that the feed flow rate would more likely be 100 gpm because an open platform ultra-filtration skid would be used and Carollo Engineers would be testing three different ultra-filtration membranes to determine the most cost effective membrane to use in a full scale facility. He noted that the rejected flow would be combined with other streams from the demonstration process, which would go to the sewer.

Mr. Zacheis responded to a question regarding the advantage of procuring the equipment in advance by stating that the advance purchase would allow the engineering drawings to be obtained sooner from the suppliers, which would help

Carollo Engineers complete the engineering work more quickly. He noted that delivery could be timed to coincide with a certain point within the construction schedule. He also responded to a question regarding testing three different types of reverse osmosis membranes by stating that the team was only planning to test the hydranautics membranes. Administering Agent/General Manager David Pedersen added that the difference with ultra-filtration membranes was that they could be tested side-by-side versus reverse osmosis testing, which would need to be done at different times.

Motion carried by the following vote:

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

7. BOARD COMMENTS

None.

8. ADMINISTERING AGENT/GENERAL MANAGER REPORT

None.

9. FUTURE AGENDA ITEMS

None.

10. INFORMATION ITEMS

A State and Federal Legislative Update

Joe McDermott, Director of Resource Conservation and Public Outreach, responded to a question regarding potential impacts to the JPA or the grant process due to the proposed restructuring of the Army Corps of Engineers and the Environmental Protection Agency by stating that staff did not believe there would be any direct impacts to the JPA.

B Tapia Water Reclamation Facility Fiscal Year 2017-18 Rehabilitation Project: Change Order No. 2

C Replacement of Tapia Primary and Secondary Clarifier Drive Equipment: Authorization of Purchase Order

D Tapia Tertiary Filter Media Replacement: Authorization of Purchase Order

11. PUBLIC COMMENTS

None.

12. CLOSED SESSION – (This item was removed from the agenda)

A Conference with Legal Counsel – Existing Litigation (Government Code Section 54956.9(a))

Zusser Company, Inc., v. Las Virgenes Municipal Water District

13. ADJOURNMENT

Seeing no further business to come before the Board, the meeting was duly adjourned at **6:03 p.m**.

Glen Peterson, Chair

ATTEST:

Janna Orkney, Vice Chair

ITEM 6A

INFORMATION ONLY

November 5, 2018 JPA Board Meeting

TO: JPA Board of Directors

FROM: General Manager

Subject : Pure Water Project Las Virgenes-Triunfo: Update

SUMMARY:

On August 1, 2016, the JPA Board selected Scenario No. 4, use of Las Virgenes Reservoir for indirect potable reuse, as the preferred alternative for the Recycled Water Seasonal Storage Basis of Design Report. The selected alternative was subsequently renamed the *Pure Water Project Las Virgenes-Triunfo*. Staff was also directed to report back to the Board on the next steps for implementation of the project. On September 6, 2016, staff reported on the next steps organized into six categories as summarized is the discussion section below. An additional category for institutional issues was subsequently added for a total of seven categories.

At each regular JPA Board meeting, staff has provided the Board with a brief update on the progress of the various items that comprise the next steps. However, it is apparent that a more comprehensive update is warranted on a periodic basis to provide the Board with a better understanding of the relationship between the various activities. At the Board meeting, staff will provide a more comprehensive overview of the progress on the Pure Water Project Las Virgenes-Triunfo.

FISCAL IMPACT:

No

ITEM BUDGETED:

No

DISCUSSION:

Categories of Next Steps:

1. Funding and Financing
2. Advocacy
3. Technical Studies
4. Public Outreach

5. Demonstration Project
6. Environmental Review
7. Potential Institutional Issues

Prepared by: David W. Pedersen, Administering Agent/General Manager

ITEM 6B

INFORMATION ONLY

November 5, 2018 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Pure Water Project Las Virgenes-Triunfo: Title XVI Feasibility Study

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SUMMARY:

Title XVI of Public Law 102-575 provides the U.S. Bureau of Reclamation (Bureau) with the authority to award grants for the planning, design and construction of water recycling and reuse projects. The first step in the eligibility process to compete for design and construction funding is the preparation and approval of a Title XVI Feasibility Study. The JPA secured a $150,000 grant to prepare a feasibility study for the Pure Water Project Las Virgenes-Triunfo. The feasibility study incorporates the results of the Advanced Water Treatment Plant Siting Study and Modeling of Las Virgenes Reservoir and will serve as a foundational document for future environmental studies.

On November 6, 2017, the JPA Board accepted a proposal from Kennedy/Jenks Consultants (KJ), in the amount of $140,370, to prepare the Title XVI Feasibility Study. The study is now complete and has been approved by the Bureau. The next step is to work with Bureau representatives and the JPA's congressional delegation to receive a congressional authorization for the Pure Water Project Las Virgenes-Triunfo, allowing the JPA to compete for Title XVI funds.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

The cost of the work is 100% offset by the $150,000 U.S. Bureau of Reclamation grant. The 50% matching requirement was satisfied through the JPA's completion of the hydrodynamic modeling of Las Virgenes Reservoir, which was incorporated into the feasibility study.

DISCUSSION:

The JPA Board directed staff to develop the next steps for the Pure Water Project Las Virgenes-Triunfo on August 1, 2016. The steps fall into seven categories: (1) funding and financing, (2) advocacy, (3) technical studies, (4) outreach, (5) demonstration project, (6) environmental analysis and (7) potential institutional issues. The next steps were further refined on September 6, 2016, when the Board authorized staff to issue proposals for the preliminary design and environmental review of a demonstration project, technical studies to support compliance with surface water augmentation regulations, and initial work to support the future environmental review of the Pure Water Project Las Virgenes-Triunfo.

In response to the Board's direction in September 2016, requests for proposals were issued for several technical studies, including:

Advanced Water Treatment Plant Siting Study:
The Siting Study utilized a rigorous screening process and comparative analysis to develop a short list of sites for an advanced water treatment plant (AWT). Starting with over 13,000 potential sites, the screening process resulted in 26 potential sites. The comparative analysis resulted in six sites with the top two sites, Sites F & A, carried forward in the Title XVI Feasibility Study. Site F is located at 30800 Agoura Road, and Site A is located at Las Virgenes Reservoir. The results of the study were presented to the Board in February 2018.

Modeling of Las Virgenes Reservoir:
Trussell Technologies performed 3-D hydrodynamic modeling of Las Virgenes Reservoir to confirm that the project will comply with surface water augmentation (SWA) regulations, in particular, the minimum dilution requirements. Overall, the results of the modeling were favorable and demonstrated that the Pure Water Project will meet the SWA regulations. There were a few isolated cases identified when the minimum dilution requirement would not be met. This occurred when the warm purified water stayed on top of the reservoir and a southeast wind pushed the purified water to the inlet of the Westlake Filtration Plant. One possible solution to this short-circuiting is the use of a multi-port submerged diffuser. Trussell is performing additional modeling of such a diffuser. The results of the study were presented to the Board in February 2018 and included in the Title XVI Feasibility Study.

Title XVI Feasibility Study:
Title XVI of Public Law 102-575 provides the Bureau with the authority to award grants for the planning, design and construction of water recycling and reuse projects. The first step in the eligibility process to compete for design and construction funding is the preparation and approval of a Title XVI Feasibility Study. A feasibility study must include the following eleven sections.

1. Introduction
2. Background
3. Water Reclamation and Reuse Opportunities
4. Description of Alternatives
5. Economic Analysis
6. Section of Proposed Title XVI Project
7. Environmental Considerations and Potential Effects
8. Legal and Institutional Requirements
9. Financial Capability of Sponsor
10. Research Needs
11. References

The intent of the Feasibility Study is identify a preferred Title XVI Project by comparing alternatives and leveraging other planning studies such as the Basis of Design Report (BODR), the AWT Siting Study and the Modeling of Las Virgenes Reservoir. The Pure Water Project Las Virgenes-Triunfo and the Encino Reservoir Project were compared and contrasted, and the Pure Water Project was selected as the preferred Title XVI Project. Incorporating the results from other studies into the Feasibility Study allowed the alternatives to be analyzed in greater detail than in the BODR.

The Feasibility Study, AWT Siting Study and Modeling of Las Virgenes Reservoir will serve as foundation documents for the future environmental analysis and preliminary design of the Pure Water Project Las Virgenes-Triunfo.

Due to the length of the study (360 pages), only the Executive Summary and Section 1, Introduction, are attached. The full study is available at www.OurPureH2o.com.

Prepared by: David R. Lippman, P.E., Director of Facilities and Operations

ATTACHMENTS:

Title XVI Feasibility Study - Executive Summary and Section 1

FINAL DRAFT

Pure Water Project
Las Virgenes-Triunfo Joint Powers Authority
Title XVI Feasibility Study

6 September 2018

Funded in part by:

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

Prepared by:

Kennedy/Jenks Consultants

Kennedy/Jenks Consultants

2775 North Ventura Road, Suite 100
Oxnard, California 93036
805-973-5700
FAX: 805-973-1440

FINAL DRAFT
Pure Water Project
Las Virgenes
Title XVI Feasibility Study

6 September 2018

Prepared for

Las Virgenes – Triunfo Joint Powers Authority (JPA)

Partly Funded by

U.S. Bureau of Reclamation Title XVI Grant

K/J Project No. 1744518*00

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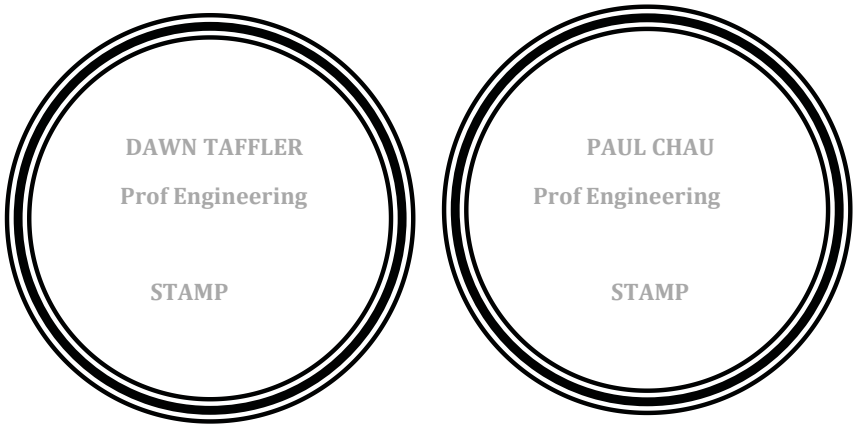
Acknowledgments

Funding for this plan has been provided in part through an agreement with the U.S. Bureau of Reclamation Title XVI Grant (Agreement No. R17AP00067).



Prepared for

Las Virgenes – Triunfo Joint Powers Authority (JPA)

Prepared by

Kennedy/Jenks Consultants

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Acronyms and Abbreviations

AF	Acre-feet
AFY	Acre-feet per year
AOP	Advanced oxidation process
AWT	Advanced Water Treatment
AWTF	Advanced Water Treatment Facility
BAC	Biologically Activated Carbon
BODR	Basis of Design Report
BOR	U.S. Bureau of Reclamation
CCR	California Code of Regulations
CDPH	California Department of Public Health (now DDW)
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
CWA	Clean Water Act
CWMD	Calleguas Municipal Water District
DBP	disinfection byproduct
DDW	Division of Drinking Water
DPR	Direct potable reuse
DSOD	Division of Safety of Dams
DWR	Department of Water Resources
EIR	Environmental Impact Report
Ft	Feet
gpd	Gallons per day
gpm	Gallons per minute
GW	Groundwater
Hp	horsepower
IAP	Independent Advisory Panel
IPR	Indirect potable reuse
JPA	Joint Powers Authority
LACFCD	Los Angeles County Flood Control District
LADWP	Los Angeles Department of Water and Power
LF	Lineal feet
LRV	Log reduction values
LVWMD	Las Virgenes Municipal Water District
M	million
Max	Maximum
MCL	Maximum contaminant limit
MCWEWMP	Enhanced Watershed Management Program for Malibu Creek Watershed
MF	Microfiltration
MG	Million gallons
mg/L	Milligrams per liter
mgd	Million gallons per day

Min	Minimum
MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
MWDSC	Metropolitan Water District of Southern California
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPR	Non-Potable Reuse
NTU	Nephelometric Turbidity Units
NWRI	National Water Research Institute
O&M	Operations and maintenance
OPWS	Oak Park Water Service
P3	Public Private Partnership
RO	Reverse osmosis
RW	Recycled water
RWPS	Recycled Water Pump Station
RWQCB	Regional Water Quality Control Board or Regional Board
SBDDW	State Board Division of Drinking Water
SMP	CMWD's Salinity Management Pipeline
SRF	State Revolving Fund
SWA	Surface Water Augmentation
SWRCB	State Water Resources Control Board or State Board
SWSAP	Surface Water Source Augmentation Project
TDS	Total dissolved solids
TM	Technical memorandum
TMDL	Total Maximum Daily Load
TOC	Total organic carbon
TSD	Triufno Sanitation District
TSD-OPWS	Triufno Sanitation District- Oak Park Water Service
TSS	Total suspended solids
TWRF	Tapia Water Reclamation Facility (also Tapia WRF)
UF	Ultrafiltration
UV	Ultraviolet
UWMP	Urban Water Management Plan
V/G/C	Virus, Giardia, and Cryptosporidium
VCWWD	Ventura County Waterworks District
WC	Water Code
WDR	Waste Discharge Requirements
WLA	Waste Load Allocation
WLFP	Westlake Filtration Plant
WRF	Water Reclamation Facility
WRFP	Water Recycling Funding Program
WRRF	WateReuse Research Foundation
WWTF	Wastewater Treatment Facility

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Executive Summary

The Las Virgenes – Triunfo Joint Powers Authority (JPA) received a grant from the U.S. Bureau of Reclamation (BOR) to perform the Feasibility Study under its Water Reclamation and Reuse (Title XVI) Program. The JPA operates the Tapia Water Reclamation Facility (TWRF or Tapia WRF) that provides wastewater treatment service for approximately 100,000 residents in the Las Virgenes Municipal Water District (LVMWD) and Trunfio Sanitation District (TSD) service areas. The JPA is the project sponsor and will own and operate the proposed Project. This report has been prepared for the JPA in accordance with BOR's Reclamation Manual Directives and Standards (WTR 11-01).

ES-1 Project Overview

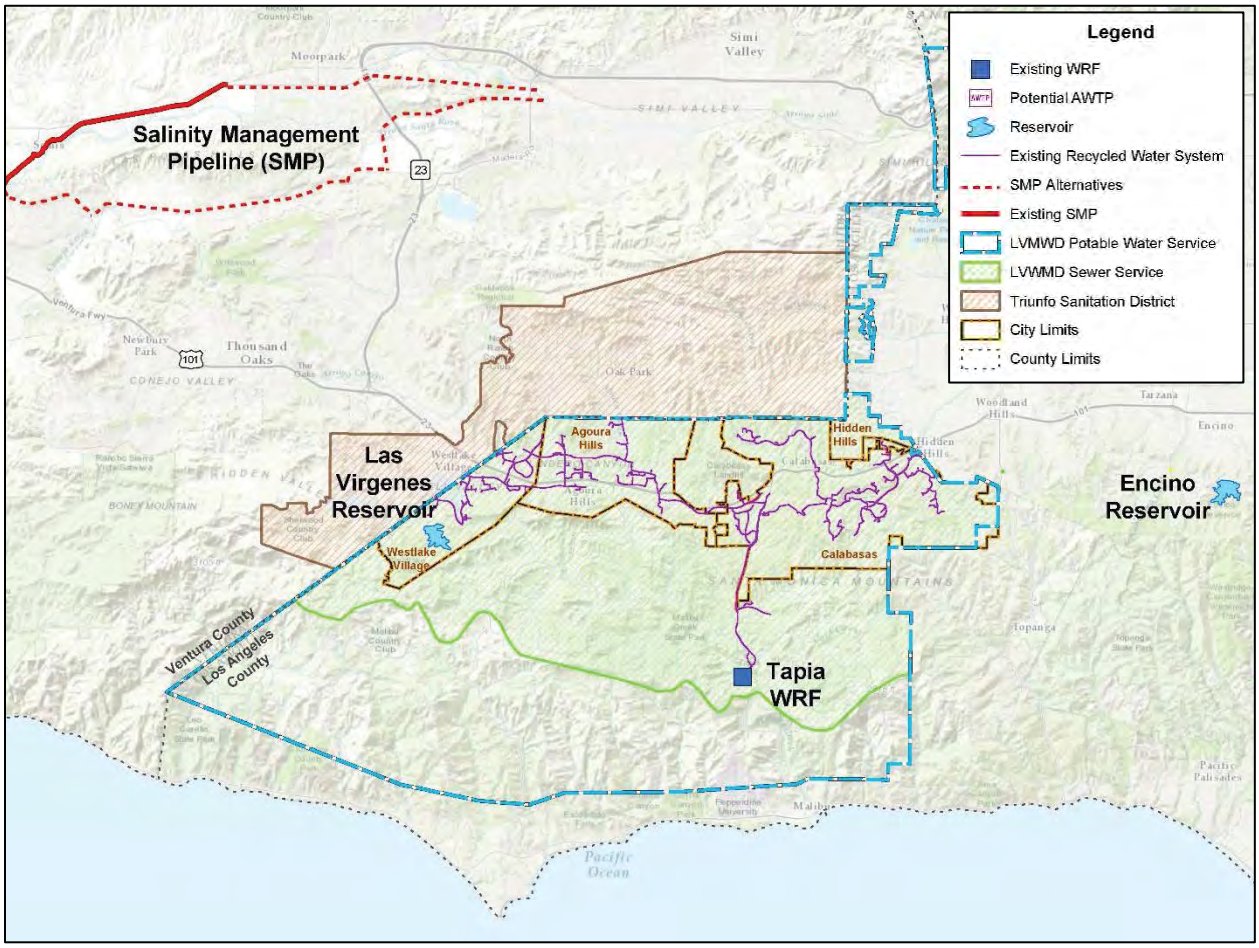
The JPA, embarked on this Title XVI Feasibility Study to identify a preferred project to improve local water supply reliability and drought resilience, and effectively eliminate discharges to Malibu Creek in most circumstances, a current practice that will become very costly due to new regulations without commensurate public benefit. Two approaches are evaluated to enable JPA to capture all its unused recycled water available during winter low irrigation demand season:

(1) An indirect potable reuse project, herein referred to as the **"Pure Water Project"** to deliver recycled water to a proposed advanced water treatment facility (AWTF) where proven technology would be used to purify the water and augment imported drinking water supplies stored at the existing Las Virgenes Reservoir. The use of purified recycled water from a municipal water reclamation facility for augmenting a reservoir that is designated as a source of domestic water supply is defined as surface water augmentation (SWA).

(2) A seasonal storage project, herein referred to as the **"Encino Reservoir Project"**, to convey surplus recycled water to the currently dormant Encino Reservoir during the low-demand winter season for use during the high-demand summer season. This project would require minimal additional treatment beyond the existing Title 22 process, as the stored water would only be available for non-potable use. Encino Reservoir is owned by Los Angeles Department of Water and Power (LADWP); thus, this project would be developed in cooperation with the City of Los Angeles.

The purpose of this Title XVI Feasibility Study is to evaluate the Pure Water Project and the Encino Reservoir Project alternatives, leveraging preliminary planning studies, the finalized SWA Regulations and findings from recent engineering and planning studies to identify a proposed Title XVI Project. The project study area, JPA service area, reservoir locations, and existing facilities are depicted in Figure ES-1.

Figure ES-1: Study Area



ES-2 Background and Reuse Opportunities

The JPA has been working to resolve three critical water resource management problems related to (1) their dependence on imported water supplies, (2) the seasonal imbalance in their supply and demand for recycled water and (3) the constraints related to discharges to Malibu Creek. Increasing water reuse presents an opportunity to address and resolve each of these issues. The proposed project alternatives seek to address these problems by maximizing utilization of the available recycled water supply, which will offset demands for imported water and eliminate discharges of recycled water to Malibu Creek.

LVMWD has very limited natural water resources and currently relies on imported water from the Metropolitan Water District of Southern California (MWD) for the majority of their supply (~84%), with recycled water providing approximately 16% of the overall supply and a minor contribution (~0.5%) from the Ventura County Waterworks District (VCWWD). TSD and Oak Park Water Service

(herein referred to as the "TSD-OPWS") similarly has limited natural water resources. The only source of potable water utilized by TSD-OPWS is imported water through Calleguas Municipal Water District (CMWD). Recycled water supply is also available from the Tapia WRF for non-potable irrigation use. The JPA is interested in pursuing local, sustainable and reliable water supply projects, such as the Title XVI project alternatives explored herein, to provide additional reliability beyond imported supplies in the future.

Currently, 100 percent of the wastewater in the JPA service area is collected and treated to disinfected tertiary recycled water standards at the Tapia WRF. Excess treated water effluent is discharged into Malibu Creek during the months of November to April. Excess effluent, beyond what can be discharged to Malibu Creek, is discharged to the Los Angeles River, via the Arroyo Calabasas, which requires pumping over the Calabasas grade. Under the existing NPDES permit (Order No. R4-2017-0124), the JPA is generally prohibited from discharging to Malibu Creek from April 15 to November 15. However, when the creek flow drops below 2.5 cubic feet per second (cfs) during this period, releases of recycled water from Tapia WRF are required to provide water pools (habitat) for the endangered steelhead trout.

The JPA has explored long-range plans to beneficially use all of the JPA's recycled water and to effectively discontinue discharges to Malibu Creek. Maximizing reuse of recycled water from the Tapia WRF through non-potable and/or potable reuse remains the most promising means to achieve this goal. There are no legal or institutional barriers related to the availability or ownership of the excess recycled water that would interfere with the project.

The JPA currently reuses 100% of the available summer flows produced at the Tapia WRF and 70% of the annual flow on average, based on data from 2001 to 2015. Future use of recycled water is influenced by the seasonal imbalance in the supply and demand for recycled water, as illustrated in Figure ES-2, where peak demands occur during the warm summer months and drop to near zero during the cool winter months. The amount of excess recycled water available for the Encino Reservoir Project and Pure Water Project Alternatives is only available in the winter months after existing recycled water demands are met, as summarized in Table ES-1. Brine minimization and stormwater capture have the potential to increase project yield but would require additional investigation to confirm feasibility and estimate additional yield and costs.

Figure ES-2: Seasonal Imbalance of Recycled Water Supply and Demand

Source: Historical Monthly Volume of Recycled Water Produced and Sold (MWH 2016)

Table ES-1: Anticipated Available Recycled Water Projections

Year	Total Supply from TWRF and Imported Water Supplement [1] (AFY)	Existing Demand [2] (AFY)	Available Supply for Project (AFY) [3]	Project Yield (AFY)
Encino Reservoir Alternative				
Year 1	7,347 – 9,650	6,547	800 – 3,102	0
Year 20	10,877 – 12,607	6,547	4,330 – 6,060	2,395 [4]
Pure Water Alternative				
Year 1	7,347 – 9,650	6,547	1,819 – 3,272	1,546 – 2,781 [5]
Year 20	10,877 – 12,607	6,547	4,330 – 6,060	3,605 – 4,609 [5]

[1] Source: Basis of Design Report (BODR) (MWH 2016)
[2] Based on the 2001-2015 average recycled water demand
[3] For the Encino Reservoir Project, the available supply accounts for existing demand and 400 AFY of seepage loss at the Encino Reservoir. For the Pure Water Project, the available supply accounts for existing demand on a monthly basis, which incorporates seasonal variability in existing demand.
[4] Additional 2,395 AFY demand from identified non-potable customers.
[5] For the Pure Water Project, the project yield accounts for the AWTF plant capacity and 15% water loss due to RO brine.

ES-3 Project Alternatives

The two Project alternatives that are evaluated as part of this Title XVI Feasibility Study encompass two different approaches to enable JPA to maximize the use of recycled water available during winter low irrigation demand season.

- **Alternative 1 – Pure Water Project** is an indirect potable reuse project to supplement potable water supplies in Las Virgenes Reservoir with purified water
- **Alternative 2 – Encino Reservoir Project** is a seasonal storage project to utilize Encino Reservoir for storage of tertiary recycled water to expand non-potable reuse.

The alternatives evaluated are shown in Figure ES-3 and described Table ES-2.

Figure ES-3: Recycled Water Project Alternatives

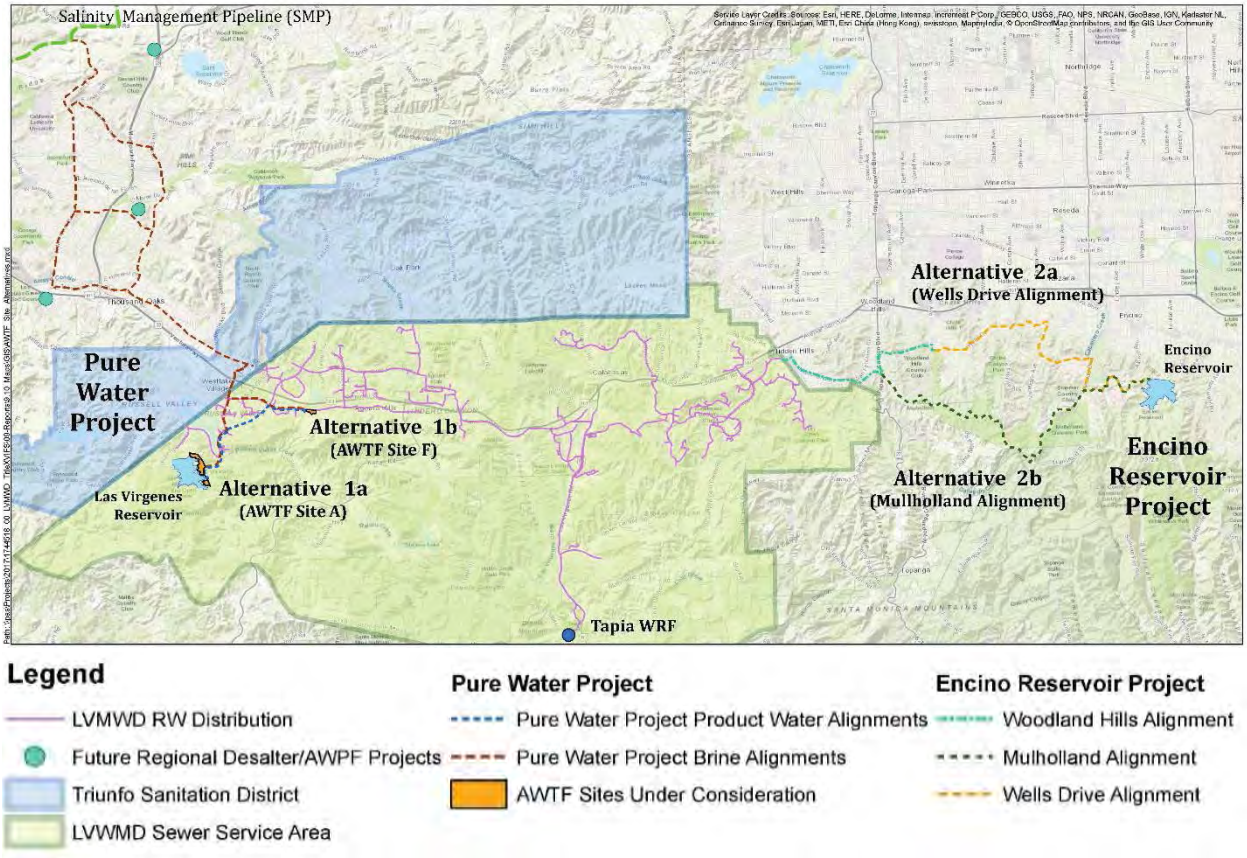


Table ES-2: Recycled Water Projects Alternatives

Alternative	Sub Alt	AWTF Location	Buildout Project Yield (AFY)	Average Project Yield (AFY)	Treatment Design Flow (mgd)	Brine Flow (mgd)
Alt 1: Pure Water Project	Alt 1a: AWTF near Las Virgenes Reservoir	Site A	4,130	3,100	6.0	0.8
	Alt 1b: AWTF at Agoura Rd Site	Site F	4,130	3,100	6.0	0.8
Alternative	**Sub Alt**	**Alignment to Reservoir**	**Buildout Project Yield (AFY)**	**Average Project Yield (AFY)**	**Conveyance Design Flow (mgd)**	**Brine Flow (mgd)**
Alt 2: Encino Reservoir Project	Alt 2a: Wells Drive Alignment	Wells Drive	2,395	1.200	11.0	none
	Alt 2b: Mullholland Alignment	Mulholland Drive	2,395	1.200	11.0	none

These two Project alternatives were developed to take a technically innovative approach, leveraging regional cooperation, to solve the ever-growing water shortage and discharge compliance issues in the JPA service area. Each alternative would serve to meet the Project objectives to improve local water supply reliability and drought resilience, and effectively eliminate discharges to Malibu Creek for compliance with new, stringent regulatory standards.

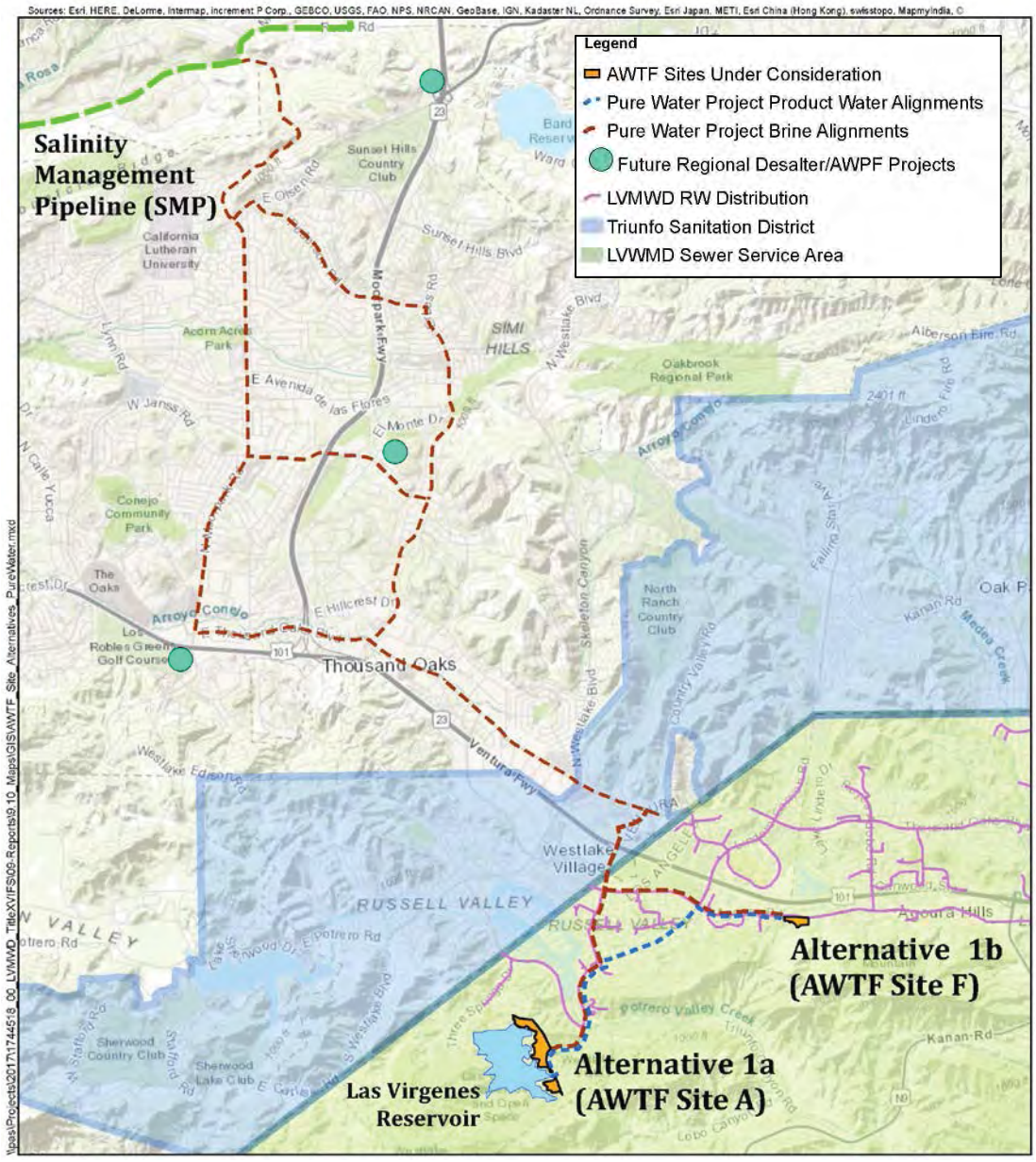
Alternative 1 - Pure Water Project

The Pure Water Project includes delivery of recycled water from the JPA's existing recycled water system to a proposed AWTF, where proven advanced water treatment processes would purify the water prior to augmenting the Las Virgenes Reservoir (MWH 2016). Water from the reservoir is treated and disinfected at the Westlake Filtration Plant (WLFP) prior to distribution to the drinking water system. Reject water, or brine, from the reverse osmosis (RO) process would be disposed of via a pipeline from the AWTF to the Salinity Management Pipeline (SMP) in Ventura County, owned and operated by CMWD. Residuals from the AWTF, other than brine, would be disposed of via a connection from the AWTF to the sanitary sewer. Figure ES-4 illustrates major facilities associated with the Pure Water Project alternatives.

The use of purified recycled water from a municipal water reclamation facility for augmenting a reservoir that is designated as a source of domestic water supply is defined as a surface water

augmentation (SWA) project. Regulations for SWA (SBDDW-16-02) were adopted by the SWRCB on March 6, 2018 (herein referred to as SWA Regulations). The Pure Water Project must meet all requirements as set forth in the SWA Regulations.

Figure ES-4: Pure Water Project Alternatives



Advanced Water Treatment (AWT) Process

The treatment processes for the Pure Water Project are selected to meet SWA Regulations and achieve specified pathogen reduction criteria at the end of the treatment train to be protective of

public health. The advanced water treatment train would include microfiltration/ultrafiltration (MF/UF), 3-stage reverse osmosis (RO) for high recovery (85%) and ultraviolet disinfection with an advanced oxidation process (UV/AOP) with stabilization and chlorination (if-needed) prior to pumping to the Las Virgenes Reservoir (MWH 2016). An AWTF demonstration program is underway by the JPA to test several approaches to purification and provide engineering data to guide selection of the most effective protocols for purifying the effluent water from the Tapia WRF and to secure regulatory approval (CDM 2017). The findings from the demonstration program may result in future modifications to the proposed advanced water treatment train, such as the selection of brine minimization technologies to increase yield and reduce reject water from the RO system.

The AWTF operation would vary by season, treating excess recycled water after existing non-potable demands are met. The facility would ramp up and down incrementally by bringing portions of the treatment train online as supply becomes available. Appropriate shut-down and storage procedures would need to be followed to maintain the life of treatment equipment, particularly for the MF/UF and RO membranes and UV reactors. Protocols for disposal of off-spec water and emergency operations would be put in place to meet all regulatory requirements.

AWTF Siting

Two sites were identified through prior siting studies as preferred locations for an AWTF, as shown in Figure ES-4 and summarized below:

- **Site A** is located on the edge of Las Virgenes Reservoir in an open space area in the City of Westlake Village. LVMWD owns the parcel and a new access road would be required to reach the site and avoid driving through residential streets for truck access to the site
- **Site F** s located on an empty lot in a business park/office retail zone off Agoura Road in the City of Agoura Hills. The JPA adopted the Negative declaration for the purchase of this property (30800 Agora Road) in August 2017 and authorized purchase of the property at the March 5, 2018 Board Meeting. The potential routes for an access road do not require driving through residential streets for truck access to the site and there is immediate access to basic utilities.

The JPA has not selected a preferred site at this time, so both sites are carried forward as potential AWTF locations for this study.

Reservoir Operations Modeling

Three operating scenarios were evaluated as part of a Modeling Study, prepared for the JPA under a separate contract (Trussell 2018 and FSI 2018), to maximize the operational flexibility of the Pure Water Project and meet regulatory requirements.

- **Routine:** During winter months, available potable reuse water would be discharged to the Reservoir when the WLFP is not in service. Then during summer months, the WLFP would operate (i.e., drawing water from the Reservoir) to recover stored purified water. Because

input of the purified water would not occur simultaneously with the operation of the WLFP, the primary regulatory parameters, dilution and retention time, are less applicable and no modeling was required to demonstrate compliance with the SWA Regulations.

- **Boundary:** The WLFP would be operated through a full winter, while simultaneously providing purified water to the reservoir. In this scenario, during the summer, irrigation demand would still be prioritized and there would be minimal input to the Reservoir. In addition, to represent a worst-case scenario in terms of dilution, no other water source would enter the reservoir (e.g., no MWDSC water received). In effect, this scenario represents the most consistent use of the Pure Water Project by incorporating all available purified water, including during the shoulder months (in Spring and Fall) when excess recycled water is available and the WLFP is under normal operating conditions
- **Emergency:** Represents an emergency scenario, where the MWDSC feeder line to the Reservoir is inoperable, either for long-term maintenance or as a result of failure and the WLFP must come on-line at a high capacity.

These operational scenarios were developed to bracket the intended use of the Reservoir with the Pure Water Project and to maximize operational flexibility by considering 'boundary' conditions. These are conditions that achieve SWA regulatory requirements but are up against the boundary of the regulations or possible uses of the project. Table ES-3 provides a summary of the three reservoir operational scenarios (Trussell 2018) in terms of the ability to meet SWA regulatory objectives for retention time and dilution.

Table ES-3: Modeling Results for Operational Scenarios

SCENARIO	Purified water inflow (MGD)	WLFP Withdrawal (MGD)	Theoretical retention time (months)	Theoretical Retention Time Regulatory Objective (months)	Predicted Lowest Minimum Dilution for All Traces [1,2]
Routine	AWTF flows during winter and Filtration Plant flows during summer. No modeling required.				
Boundary	1.7	5.0	8.5	> 6.0	77:1
Emergency	6.0	15.0	2.4	> 2.0	69:1

Source: Modeling Study (Trussell 2018)

[1] Estimated based on approximately 30 tracer release simulations. The shortest predicted lag time from the introduction of purified water to the inlet of the WFLP was 0.6 days.

[2] SWA Regulations require a dilution requirement in the reservoir of 100:1 (one percent by volume), or 10:1 (ten percent by volume) with an additional 1-log microbial pathogen treatment to demonstrate the percent of recycled water withdrawn from the reservoir, by volume, during any 24-hour period.

As shown in Table ES-3, under all operational scenarios considered, the theoretical retention regulatory objective of greater than 2 months (60-days) would be met. Overall, the hydrodynamic modeling results and tracer simulations were favorable, indicating that the Pure Water Project would be in compliance with the SWA Regulations for retention and dilution.

An Independent Advisory Panel (IAP) meeting was held on May 4, 2018 to solicit feedback on (1) the results of initial reservoir modeling efforts and (2) the feasibility of the Pure Water Project to comply with reservoir requirements of the SWA Regulations. Based on the information presented at the May 4th meeting, the Panel concluded the following (NWRI 2018):

- The JPA's Board of Directors and executive leadership appear committed to appropriate planning and investment to ensure regional water supply reliability.
- The proposed Project effectively addresses the necessary water supply, regulatory, and environmental considerations.
- The preliminary reservoir model analyses and scenarios are reasonable and provided the Panel with valuable insight into the proposed Project.
- The proposed Project, as presented to the Panel, appears to be capable of complying with the SWA Regulations.

The JPA's proactive approach to obtain expert panel review and the Panel's conclusions should serve to expedite the permitting process. For the purpose of this study, Alternative 1 assumes a submerged multi-port diffuser to increase mixing and that one additional log removal of pathogens would be needed at the AWTF to operate under emergency conditions.

Alternative 1a and 1b Facilities

Table ES-4 summarizes the facilities and sizing associated with Alternatives 1a and 1b, which primarily differ due to AWTF siting. Both alternatives would produce up an average of 3,100 AFY of purified water supply. An extension pipeline would be constructed to convey tertiary water from the existing non-potable recycled water system to serve as influent to the AWTF. A new purified water pipeline would be constructed to convey purified water produced at the AWTF to the Reservoir. A new brine pipeline would convey RO process reject water from the AWTF to the SMP. Purified water stored in the Reservoir would co-mingle with imported drinking water supplies, also stored in the Reservoir, and would be released for treatment and disinfection at the WLFP prior to distribution to the drinking water system.

Table ES-4: Summary of Alternative 1a and 1b Facilities

Facility Component	Units	Alt 1a AWTF Site A	Alt 1b AWTF Site F
Treatment (AWTF capacity)[1]	MGD	6.0	6.0
Pipelines			
Tertiary (24"-dia)	LF	15,800	9,200
Purified (20"-dia)	LF	900	15,200
Brine (12"-dia)	LF	63,800	62,800
Waste (6"-dia)	LF	2,510	1,060
Pump Station	No pump stations are required to convey various flows to and from the AWTF based on a preliminary hydraulic analysis.		
Storage	No external storage reservoirs are needed outside of the AWTF		
Mixing System	Two mixing aerators in Las Virgenes Reservoir and a product water diffuser.		
Brine Discharge Station	Brine discharge station to connect to the CMWD SMP		

[1] Includes MF/RO/UV/AOP process train and associated chemical feed systems, wet wells, inter-process pumps and other appurtenances. Brine concentration or minimization technology is not included in this alternative.

Alternative 2 – Encino Reservoir Project

The Encino Reservoir Project would convey surplus recycled water from the Tapia WRF to the currently dormant Encino Reservoir during the low-demand winter season for use during the high-demand summer season. Encino Reservoir is owned by Los Angeles Department of Water and Power (LADWP) and is not currently in service because of challenges meeting the requirements of the Surface Water Treatment Rule and concerns about the seismic stability of the dam. This project would be developed in cooperation with the City of Los Angeles. Figure ES-5 illustrates facilities associated with the Encino Reservoir Project alternatives.

Treatment

The Encino Reservoir Project would receive Title 22 recycled water from the Tapia WRF that already meets standards for unrestricted non-potable reuse. However, additional treatment facilities would be constructed at Encino Reservoir to improve water quality of outflows from the reservoir, to remove any algae or debris from the open-air reservoir. Treatment facilities would include filtration and disinfection to prevent clogging of sprinklers or growth in distribution systems, which would provide quality assurance for customers and protect equipment and facilities within the recycled water distribution system.

Non-Potable Demands

The Encino Reservoir Project would provide an opportunity to increase the amount of supply available for irrigation uses by storing winter flows for delivery in high demands months to meet the supply gap in the summer months rather than relying upon potable water supplements to fill the gap. Potential customers include infill development, non-potable users in route to Encino

Reservoir and an extension in Woodland Hills, as listed in Table ES-5. Of the 1,200 AFY of potential average demand, only 474 AFY would offset potable water demands in the JPA service area.

Figure ES-5: Encino Reservoir Project Alternatives

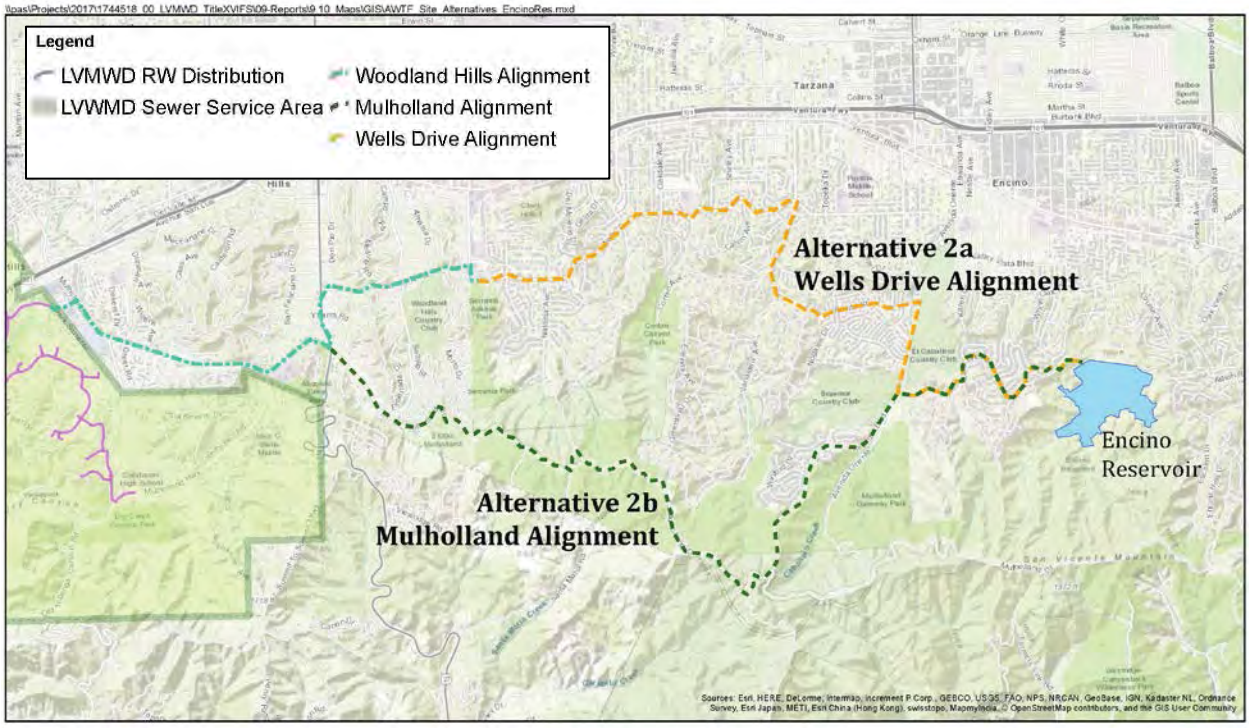


Table ES-5: Estimated Demands for NPR Users for Encino Reservoir Project

Potential Non-Potable Use Areas	Estimated Demands at Buildout[1] (AFY)	Estimated Average Demands [1] (AFY)	Estimated Potable Offset within JPA Service Area (AFY)
Infill development within LVMWD	740	370	370
Thousand Oaks Boulevard Extension	251	126	-
Oak Park HOA Conversions	207	104	104
Westlake Conversions (schools/parks)	130	65	-
Woodland Hills GC Extension	477	240	-
El Caballero Country Clubs	590	295	-
Total Demand	**2,395**	**1,200**	**474**

[1] 2016 BODR (MWH 2016), including Appendix K

Encino Reservoir Operations

The 168-foot-tall earth dam at Encino Reservoir was constructed in 1924 and is routinely inspected by the Division of Safety of Dams (DSOD). The reservoir capacity is 9,789 AF; however, LADWP typically maintained a volume of about 7,300 AF for operation until it was taken out of regular service in 2002. In 2005, a new filtration plant and pumping station were constructed next to the reservoir to meet the new surface water treatment regulations and LADWP currently only uses Encino Reservoir as emergency water storage for use during severe seismic events or other catastrophic water system failures (MWH 2016)

At the most simplistic level, reservoir operations for the project would consist of (1) filling Encino Reservoir with surplus water available from TWRF on a daily basis and (2) conveying stored water from Encino Reservoir back to the recycled water distribution system to satisfy peak demands on days when demand exceeds supply. In practice, however, reservoir operations would be much more complicated. Reservoir operations would need to carefully balance the need to maintain adequate storage capacity, address water quality issues and utilize unallocated surplus recycled waters supplies.

Pursuit of the Encino Reservoir Project would necessitate the completion of a seismic study to identify additional rehabilitation requirements for the dam, modifications to the outflow from the reservoir to provide an alternate drain in case of emergency and likely a change in its use as an emergency supply. Furthermore, institutional agreements and extensive coordination with LADWP and the City of Los Angeles would be the cornerstone of the Encino Reservoir Project. In addition, future efforts would be needed to develop a robust reservoir operations model, establish a water quality sampling plan and identify a preferred approach for utilizing unallocated recycled water surplus supplies

Alternative 2a and 2b Facilities

Table ES-6 summarizes the facilities and sizing associated with Alternatives 2a and 2b, which primarily differ due to conveyance alignments. Both alternatives would result in an additional 2,395 AFY of non-potable reuse at buildout (1,200 AFY on average) and would rely on a combination of existing conveyance infrastructure and new pipelines and pump stations to convey water to and from Encino Reservoir. New pump stations and pipelines would be sized to carry the maximum day surplus recycled water flow during the winter months (12 mgd) to Encino Reservoir and to meet peak irrigation demands (11 mgd) from the reservoir during the summer months. The existing recycled water pump station (RWPS) East would require a 5.5 mgd increase from the existing capacity (6.5 mgd) to meet project design flows. Additional treatment facilities would be sized to meet the peak hourly irrigation demands to maintain water quality re-entering the recycled water distribution system

Table ES-6: Summary of Alternative 2a and 2b Facilities

Facility Component	Units	Alt 2a Wells Drive Alignment	Alt 2b Mulholland Alignment
Treatment at Encino Reservoir[1]	MGD	11.0	11.0
Pipelines			
24" Standard Pressure Pipeline	LF	52,400	28,300
24" High Pressure Pipeline	LF	27,500	52,500
Pump Station			
Pump Station at Encino Reservoir	HP	2,500	2,500
RWPS East Upgrade	HP	1,000	500
Pump Station on Mulholland	HP	not incl.	1,200
Storage	MG	not incl.	1.0
Aeration and Mixing System	Two air compressors and a grid of distribution piping anchored just above the reservoir bottom to help meet oxygen demand		

[1] Includes strainers and chlorination system at Encino Reservoir, including associated appurtenances to meet peak irrigation demands from the reservoir during the summer months

ES-4 Economic Analysis

An engineer's opinion or probable cost was generated based on the engineering work to allow for an economic and financial analysis of the project alternatives. Costs are broken down for capital and operation and maintenance (O&M) costs in accordance with Title XVI guidelines. Annualized capital costs, annual O&M costs and average project yields are used to estimate the anticipated unit life cycle cost of each project alternative to compare project alternatives.

If no project was implemented, the District would continue to purchase MWDSC water at Tier 1 commodity rates to meet increased potable demands. Thus, the economic analysis accounts avoided costs, from reduced MWDSC purchases, as a direct annual O&M savings for both the Pure Water and Encino Reservoir Projects. For the Encino Reservoir Project, the revenues from additional recycled water sales are also included as an annual O&M cost saving.

Table ES-7 compares the construction cost of major facility components and details annual and life cycle unit costs based on the average project yield for each alternative. Figure ES-6 graphically compares costs between alternatives.

Table ES-7: Cost Comparison of Alternatives

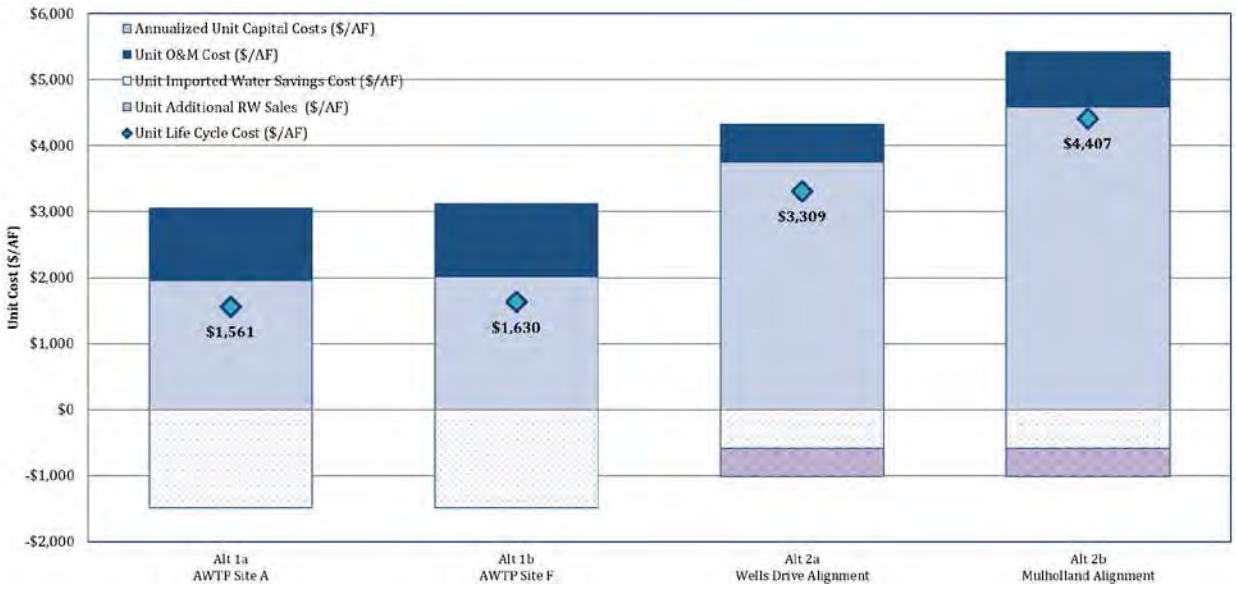
	Pure Water Project		Encino Reservoir Project	
Alternative	**Alt 1a AWTF Site A**	**Alt 1b AWTF Site F**	**Alt 2a Wells Drive Alignment**	**Alt 2b Mulholland Alignment**
Average Annual Project Yield (AFY)	**3,100**	**3,100**	**1,200**	**1,200**
Facility Component (Loaded Costs)				
Treatment	$80,600,000	$76,100,000	$1,600,000	$1,600,000
Pipelines	$35,600,000	$38,600,000	$56,000,000	$62,200,000
Pump Station	$0	$3,600,000	$29,600,000	$37,800,000
Storage	NA	NA	NA	$4,700,000
Mixing System	$1,700,000	$1,700,000	$800,000	$800,000
Brine Discharge Station	$500,000	$500,000	NA	NA
Subtotal Construction *(with Markups and Contingency)*	$118,400,000	$120,500,000	$88,000,000	$107,100,000
Land Acquisition	$0	$2,100,000	$0	$1,000,000
Project Capital Cost Total ($)	**$118,400,000**	**$122,600,000**	**$88,000,000**	**$108,100,000**
Annualized Unit Capital Costs ($/AF)	**$1,949**	**$2,018**	**$3,742**	**$4,591**
Annual O&M Cost ($/yr)	$3,400,000	$3,400,000	$700,000	$1,000,000
Unit O&M Cost ($/AF)	$1,100	$1,100	$580	$830
Unit Imported Water Savings Cost[1] ($/AF)	-$1,488	-$1,488	-$588	-$588
Unit Additional RW Sales[2] ($/AF)	NA	NA	-$425	-$425
Unit Life Cycle Cost ($/AF)	**$1,561**	**$1,630**	**$3,309**	**$4,407**

Note:

[1] For the Encino Reservoir Project, the unit imported water savings is lower because it only applies to buildout demands in the JPA service area (474 AFY for infill demand and Oak Park HOA conversations).

[2] Additional recycled water sales are assumed to apply to the average annual project yield (1,200 AFY)

Figure ES-6: Alternative Unit Life Cycle Cost Comparison



In the absence of the Project (i.e. the "No Project Alternative), the JPA would continue to purchase MWDSC water at Tier 1 commodity rates to meet increased potable demands and develop, expand or explore possible opportunities to increase local supply resiliency. The costs associated with the No Project alternative include the following:

- Continued purchases of treated MWDSC water at Tier 1 commodity rates to meet increased potable demands,
- Advanced nutrient removal for total maximum daily load (TMDL) compliance for future discharges of unused recycled water from Tapia WRF to Malibu Creek, including solids handling improvements, and
- Disposal costs associated with unused recycled water from Tapia WRF via alternative means during the prohibition period (May to October).

Table ES-8 summarizes the No Project Alternative costs. For the purpose of this economic analysis, it is assumed that these activities would continue for 20 years, the assumed project duration for Alternatives 1 and 2, and applies the same cost assumptions presented in Table ES-7. The No Project unit life cycle cost of $3,450 to $4,077 per AF is higher than both the Pure Water Project unit life cycle cost of $1,561 to $1,630 per AF and the Encino Reservoir Project unit life cycle cost of $3,309 per AF for Alternative 2a. Alternative 2b has the highest unit life cycle cost of $4,407 per AF.

Table ES-8: No Project Alternative Costs

No Project Alternative	Range of Costs		
TMDL Compliance for Discharge of Winter Excess Flow to Malibu Creek[1]			
Capital Cost ($mil)	$130	to	$150
O&M Cost ($mil per year)	$4	to	$5
Excess Recycled Water (Nov to Apr) (AF)[2]	2,400	to	4,040
TMDL Compliance Unit Cost ($/AF)	$3,300	to	$3,927
Disposal of Sumer Excess Flows[3]			
Excess Recycled Water (May to Oct) (AF)	60	to	1,150
Project Disposal Total Cost ($mil per year)	$0.01	to	$0.17
Project Disposal Unit Cost ($/AF)	$150	to	$150
Unit life Cycle Cost ($/AF)	**$3,450**	**to**	**$4,077**

[1] Estimated cost for advanced nutrient removal and brine disposal from Scenario Concept #1 of the Recycled Water Seasonal Storage Plan of Action (MWH 2015) plus additional costs for solids handling improvements for increased disposal (Hazen 2016).
[2] Excess recycled water for Year 1 to Year 20.
[3] Estimated unit cost based on historical disposal costs for Rancho spray fields, pumping to LA River and BOS raw sewage disposal.

ES-5 Proposed Title XVI Project

The JPA desires to fully and beneficially reuse its recycled water, and adopted the following principals to guide the investigation of Project alternatives:

1) Maximize Beneficial Reuse
2) Seek Cost Effective Solutions
3) Seek Partnerships beyond the JPA
4) Gain Community Support
5) Govern with a Partnership
6) Be Forward Thinking

The BODR (MWH 2016) and Recycled Water Seasonal Storage Plan of Action (MWH 2015) engaged key stakeholders to define project goals and key metrics for evaluating alternatives. Project alternatives were compared based on their ability to meet the six guiding principles, achieve project objectives and address potential risk identified by the stakeholders. Both project alternatives were deemed to offer value to the JPA; however, based on the stakeholder workshop project evaluation results, the Pure Water Project scored twice as high as the Encino Reservoir Project.

On August 1, 2016 the JPA governing Board selected the Pure Water Project as the preferred alternative (herein also referred to as the proposed Title XVI project) for the following reasons:

1) Indirect potable reuse (IPR) is visionary and forward-thinking, consistent with the JPA Board's adopted Guiding Principles.
2) The Pure Water Project involves the best and highest use of the JPA's recycled water resource and retains the full benefit of the resource for the JPA's customers.
3) Potential risks, as identified by the stakeholders, are more effectively avoided with the Pure Water Project.
4) Stakeholder polling identified the Pure Water Project as the preferred alternative.
5) By offsetting the escalating cost to purchase imported water, the Pure Water Project provides substantially greater long-term economic value to the JPA.
6) By replacing energy intensive imported water, there will be greater energy savings and an overall reduction in greenhouse gases.
7) By efficiently utilize existing assets in combination with new infrastructure, there will be cost savings and reduced impacts associated with new construction.
8) The Pure Water Project can be completed in sufficient time to achieve compliance with the terms for implementation of the 2013 Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients to Address Benthic Community Impacts; whereas, timing for The Encino Reservoir Project remains uncertain.

The Pure Water Project will provide a significant new, local and drought-resilient potable water supply that will reduce the JPA's reliance on imported water and the need to develop other water supplies. With reduced imported water usage, which is supplied from the State Water Project, the fragile Bay Delta ecosystem will be less strained and overall greenhouse gases production will decrease.

ES-6 Other Considerations

Environmental Considerations

The proposed Title XVI project construction activities are anticipated to have short-term impacts to endangered or threatened species, water quality, hydrology, natural resources, waters of the United States, and cultural resources. Short-term construction impacts, associated with activities such as grading, excavation and installation of facilities, can be mitigated by methods such as utilizing trenchless technologies for sensitive areas, performing biological and cultural surveys, and implementing best management practices.

Longer-term operation and maintenance activities would include mechanical and chemical treatment of recycled water to meet SWA regulatory requirements, energy, material use, and transportation associated with facility operations, most of which would be conducted at the AWTF.

By replacing imported water, the environmental impacts and energy use may be reduced by the generation of local water supplies.

In addition, the proposed Title XVI project will introduce a very high-quality water into the basin and convey reject water from the RO process out of the basin, which will result in a net export of salt from the watershed and a reduction in constituents, such as bromide (NWRI 2018). The purification of recycled water would thereby produce long-term benefits for groundwater and surface water in the region.

Legal and Institutional Requirements

The JPA is the owner of the Tapia WRF and has made no arrangements nor agreements to transfer jurisdiction of rights to the wastewater. There are no downstream legal users from the Tapia WRF. Thus, there are no anticipated issues related to water or wastewater rights resulting from the implementation of the Pure Water Project.

There are existing contractual water supply obligations as defined in various agreements between LVMWD, TSD and existing water users in the JPA service area that may be affected by implementation of the Pure Water Project. In addition, a new agreement with CMWD would be required to allow the discharge of brine to the SMP.

Interagency coordination would be required with local cities for encroachment permits and with the RWQCB and DDW for permitting. The Pure Water Project must meet all permitting requirements as set forth in the SWA Regulations (SBDDW-16-02), including but not limited to applying to the Regional Board for a permit, obtaining a permit for the operation of a Surface Water Source Augmentation Project (SWSAP), and complying with the terms and conditions of the Regional Board permit.

The JPA has already taken initial steps to meet the SWA regulatory permitting requirements. Completion of CEQA/NEPA compliance requirements will be satisfied prior to construction.

Implementation of the proposed Title XVI project would allow the JPA to beneficially use most, if not all, of the Tapia WRF's excess recycled water and to effectively discontinue discharges to Malibu Creek in the winter months. The Project would therefore achieve compliance with the winter waste load allocations (WLAs) as described in Tapia WRF's waste discharge requirements (WDRs) contained in Order No. R4-2017-0124 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0056014.

Financial Capability of Sponsor

The JPA would fund its share of the costs in the following way. Capital costs are assumed to be allocated between LVMWD and TSD based on a 70.6%/29.4% split, with O&M costs following the same allocation (PFM 2017).

- Pre-construction costs are expected to be funded through a combination of cash contributions from LVMWD, TSD and grants, to the extent they are available, based on the cost allocation framework (PFM 2017).
- Construction costs are expected to be funded through a combination of grants, loans and municipal bonds. Potential funding partners may be identified, as-appropriate, depending on the potential for a Public Private Partnership (P3) or Regional Consortium to make the Project more cost-effective and/or to reduce risk.
- The JPA would fund full operation, maintenance, and ongoing replacement costs through ongoing rates and charges.

The JPA would evaluate available funding options at the appropriate time when project costs and agreements are further refined, and the Project is closer to construction. A method for allocating costs among the applicable service types (e.g. potable water, recycled water, and sanitation) would also be developed in order to properly determine cost impacts on each respective customer class (PFM 2017). As the initial date of construction nears, the JPA would define an overall Project Financing Plan based on contemporary market conditions and available funding sources.

Research Needs

The proposed Title XVI project would rely on a combination of proven technologies and conventional system components along with the exploration innovative approaches through new areas of research. The AWTF would use proven advanced treatment processes to meet SWA Regulations, while the conveyance of flows to and from the AWTF would consist of conventional conveyance components (e.g. pipelines and pump stations) implemented via industry standard design and construction practices. Three potential areas of research are identified that could be beneficial to the proposed Project:

(1) **brine minimization technologies** - to identify opportunities to achieve a higher RO recovery rate to reduce infrastructure, energy and disposal costs associated with disposal of brine through the SMP.
(2) **brine chemical stabilization strategies** - to identify pretreatment and/or chemical addition/control solutions for stabilizing brine generated from the RO process to maize and/or avoid precipitation in the brine line.
(3) **stormwater capture opportunities** – to provide an opportunity to store and divert stormwater to the sanitary sewer for additional treatment at the Tapia WRF and to increase available flows to the AWTF.

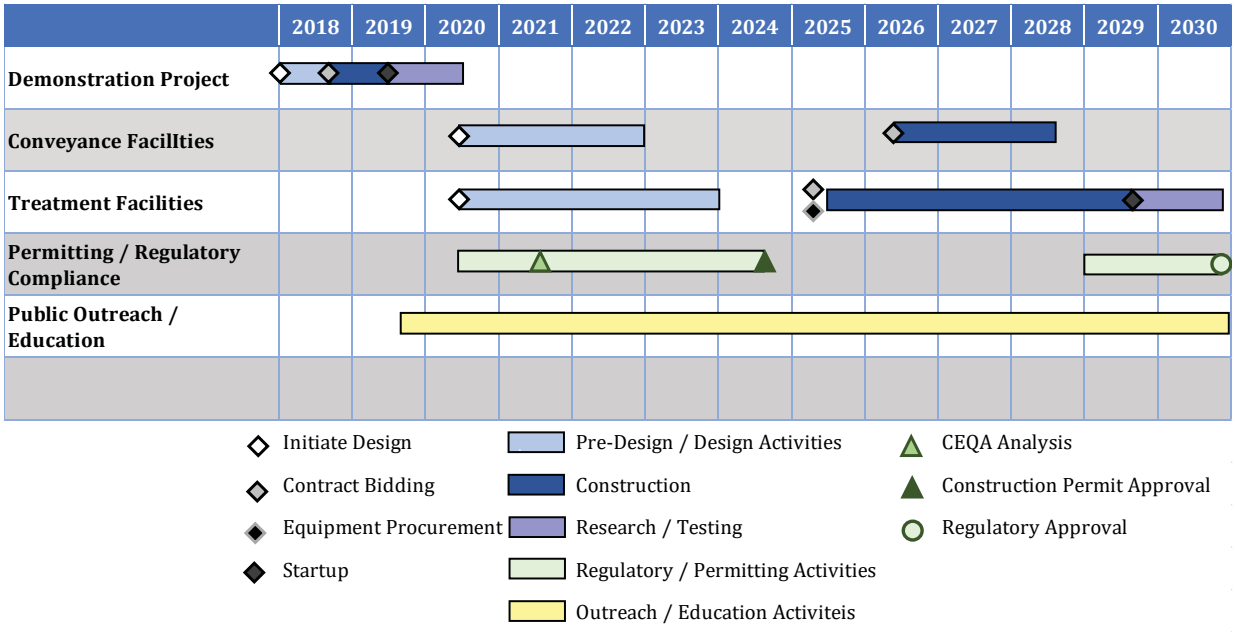
The JPA would administer and lead research projects for brine minimization and stabilization. Research projects related to brine minimization and stabilization would be conducted in the next 1 to 2 years to inform the final design of the AWTF. Initial investigation into these research areas is already being explored as part of the JPA's Demonstration Project.

A stormwater capture research project would be developed in collaboration with the Enhanced Watershed Management Program for Malibu Creek Watershed (MCWEWMP) developers, County of LADWP, Los Angeles County Flood Control District (LACFCD), and local stormwater management entities, such as Agoura Hills, Calabasas, and Westlake Village. According to the 2016 MCEWMP, the stormwater capture projects being considered are slated for design in December 2019. Should the JPA pursue collaborative or independent research to enhance stormwater capture to supplement source water supplies, it would be beneficial to initiate a feasibility assessment in the next 1 to 2 years to align with the greater MCWEWMP.

ES-7 Next Steps

A proposed implementation schedule for the proposed Pure Water Project is illustrated in Figure ES-7. This schedule is based, in part, on the compliance schedule and milestone dates to achieve compliance with the winter WLAs as described in the Tapia WRF's WDR and NPDES permits.

Figure ES-7: Proposed Pure Water Project Implementation Schedule



The JPA is committed to constructing a purified water demonstration facility and is in the initial phases of planning and design. The JPA received a Bureau of Reclamation WaterSMART grant to conduct research for a variety of operational efficiencies at the demonstration facility. Following the demonstration project, the JPA will be initiating design, equipment procurement and construction for the AWTF and conveyance facilities. Permitting efforts will be conducted in parallel to meet all regulatory requirements and complete necessary environmental documentation. The IAP may be called upon, as-needed to provide expertise and peer review.

Public outreach will be sustained through the Pure Water Project to maintain transparent and open communications with stakeholders and JPA customers.

Section 1 Introduction

The Las Virgenes – Triunfo Joint Powers Authority (JPA) received a grant from the U.S. Bureau of Reclamation (BOR) to perform the Feasibility Study under its Water Reclamation and Reuse (Title XVI) Program.

1.1 Report Organization

This report has been prepared in accordance with BOR's Reclamation Manual Directives and Standards (WTR 11-01). Italicized red text within this report represents excerpts from the BOR manual, whereby the ensuring report text addresses the specific topic. This report consists of the following sections:

- Section 1: Introduction
- Section 2: Background
- Section 3: Water Reclamation and Reuse Opportunities
- Section 4: Description of Alternatives
- Section 5: Economic Analysis
- Section 6: Selection of the Proposed Title XVI Project
- Section 7: Environmental Consideration and Potential Effects
- Section 8: Legal and Institutional Requirements
- Section 9: Financial Capability of Sponsor
- Section 10: Research Needs
- Section 11: References

The following appendices are included to provide additional detail and supporting materials as needed:

- Appendix A: Allowable Recycled Water Uses in California
- Appendix B: Supporting Engineering Calculations
- Appendix C: Engineers Opinion of Probable Costs
- Appendix D: Stormwater Capture
- Appendix E: Brine Minimization
- Appendix F: Initial Environmental Review
- Appendix G: Surface Water Augmentation (SWA) Regulations (SBDDW-16-02)
- Appendix H: Reservoir Modeling
- Appendix I: Independent Advisory Panel
- Appendix J: Project Financing Plan

1.2 Project Overview

The JPA, embarked on this Title XVI Feasibility Study to identify a preferred project to improve local water supply reliability and drought resilience, and effectively eliminate discharges to Malibu Creek in most circumstances, a current practice that will become very costly due to new regulations

without commensurate public benefit. Two approaches are evaluated to enable JPA to capture all of its unused recycled water available during winter low irrigation demand season (1) an indirect potable reuse project and (2) a seasonal storage project.

The indirect potable reuse project, herein referred to as the **"Pure Water Project"**, would produce up to 5,151 acre-feet per year of new, local, drought-resilient water supply. The project includes delivery of recycled water to a proposed advanced water treatment facility (AWTF) where proven technology would be used to purify the water and augment imported drinking water supplies stored at the existing Las Virgenes Reservoir. Water from the reservoir is treated and disinfected at the Westlake Filtration Plant (WLFP) prior to distribution. The use of purified recycled water from a municipal water reclamation facility for augmenting a reservoir that is designated as a source of domestic water supply is defined as surface water augmentation (SWA).

The State Water Resource Control Board, Division of Drinking Water (SBDDW) regulations for surface water augmentation using recycled water (SBDDW-16-02) were adopted by the SWRCB on March 6, 2018 under Resolution No. 2018-0014 (herein referred to as SWA Regulations). The Pure Water Project must meet all requirements as set forth in the SWA Regulations, including but not limited to applying to the Regional Board for a permit, obtaining a permit, the operation of a Surface Water Source Augmentation Project (SWSAP), and complying with the terms and conditions of the Regional Board permit.

The seasonal storage project would convey surplus recycled water to the currently dormant Encino Reservoir during the low-demand winter season for use during the high-demand summer season. Encino Reservoir is owned by Los Angeles Department of Water and Power (LADWP) and is not currently in service because of challenges meeting the requirements of the Surface Water Treatment Rule. This project, referred to herein as the **"Encino Reservoir Project"**, would be developed in cooperation with the City of Los Angeles.

The Pure Water Project and the Encino Reservoir Project were developed through a collaborative, stakeholder-driven process that involved over 17 organizations with various roles in the Malibu Creek Watershed. Six conceptual alternatives were developed and evaluated by the stakeholders. The Pure Water Project was identified as the best option to meet the project objectives with the Encino Reservoir Project identified as an alternative approach.

The purpose of this Title XVI Feasibility Study is to evaluate the Pure Water Project and the Encino Reservoir Project alternatives, leveraging preliminary planning studies, the finalized SWA Regulations and findings from recent engineering and planning studies. The work includes evaluating the supply and demand balance for recycled water, appropriate treatment methods, regulatory requirements, treatment plant siting options, pipeline alignments, reservoir hydrodynamics, environmental considerations, and estimated costs and benefits to identify a proposed Title XVI Project.

1.3 Identification of the Non-Federal Project Sponsor(s)

The project sponsor is the Las Virgenes-Triunfo Joint Powers Authority (JPA), a partnership between LVMWD and TSD. The JPA operates the Tapia Water Reclamation Facility (TWRF or Tapia WRF) that provides wastewater treatment service for approximately 100,000 residents in the LVMWD and TSD services areas. The JPA will own and operate the proposed Project.

LVMWD provides potable water, recycled water, and wastewater collection services for over 75,000 people. The district is a member public agency of the Metropolitan Water District of Southern California (MWD) and purchases water directly from MWD. LVMWD serves as the JPA's Administering Agent.

TSD provides wastewater collection services for over 30,000 people in east Ventura County. The district also provides potable and recycled water service in select areas. Potable water supplies are purchased from the Calleguas Municipal Water District (CMWD), a member public agency of MWDSC (JPA 2013).

1.4 Description of the Study Area and an Area/Project Map

Describe study area in terms of both the site-specific project area where the reclaimed water supply will be needed and developed, and any reclaimed water distribution systems.

The study area includes the service areas of LVMWD and Triunfo, located in the northwestern portion of Los Angeles County and the southeastern portion of Ventura County. The JPA's service area, shown in Figure 1-1, generally consists of the Malibu Creek Watershed and small portions of the Los Angeles River Watershed.

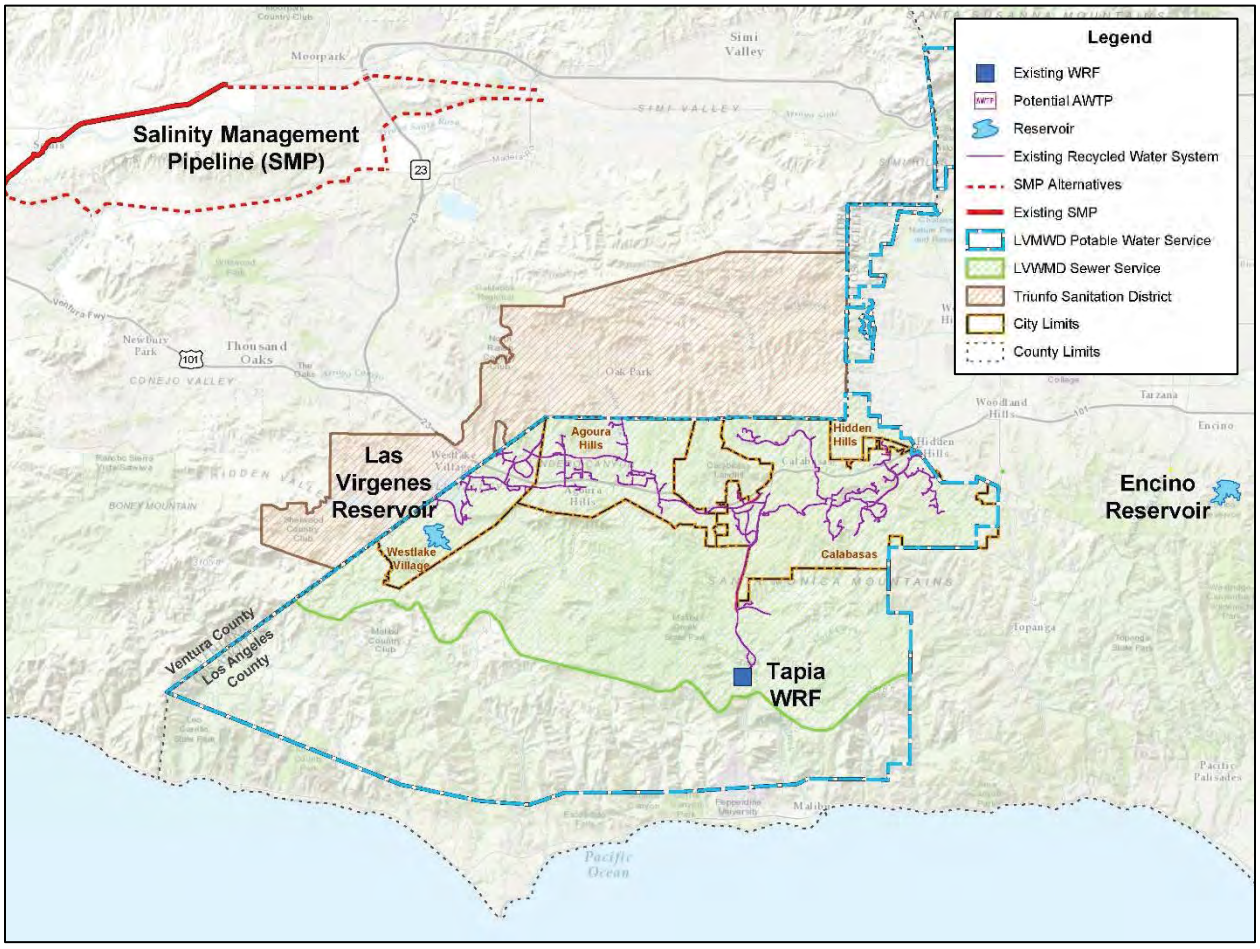
The agencies comprising the JPA have a long history of providing recycled water from TWRF in their respective service areas, serving their first customers in the early 1970s. In the case of LVMWD, 20% of current annual water demand is met with recycled water and over 65% of all wastewater treated is used for recycled water irrigation. The recycled water is primarily used for landscape irrigation of schools, parks, streets and highway medians, property association common areas and golf courses through its extensive recycled water distribution system. Figure 1-1 shows the existing recycled water system.

The Pure Water Project would convert surplus recycled water produced at TWRF to a new local water supply that would benefit the service areas of both agencies. LVMWD provides potable water service to its entire service area and TSD provides potable water service to the Oak Park portion of its service area. In both cases, 100% of the potable water is imported from the State Water Project and purchased from the MWD. The Pure Water Project would include a new advanced water treatment facility (AWTF) located in proximity to the Las Virgenes Reservoir and the existing recycled water conveyance system. A new connection to the regional Salinity Management Pipeline (SMP), also shown in Figure 1-1, would be needed to dispose of concentrate from the reverse osmosis process.

Stored purified water would blend with imported supplies and be available for potable use in the JPA service areas.

The Encino Reservoir Project would require minimal additional treatment beyond the existing Title 22 process and new conveyance facilities to and from Encino Reservoir. Stored recycled water would only be available for non-potable use.

Figure 1-1: Study Area



November 5, 2018 JPA Board Meeting

TO: JPA Board of Directors

FROM: Finance & Administration

Subject : Financial Review: First Quarter of Fiscal Year 2018-19

SUMMARY:

The first quarter financial review presents data as of September 30, 2018. It is important to note that due to the timing of various projects and payments, the first quarter report should primarily be used to identify areas where an emerging trend may affect the JPA's position at fiscal year-end.

RECOMMENDATION(S):

Receive and file the financial review for the first quarter of Fiscal Year 2018-19.

FISCAL IMPACT:

No

ITEM BUDGETED:

No

FINANCIAL IMPACT:

There is no financial impact associated with this action.

DISCUSSION:

The JPA's first quarter net uses of funds in Fiscal Year 2018-19 totaled $3.9 million, compared to $6.6 million for the same period in Fiscal Year 2017-18. There was a year-over-year increase in operating revenues of 7.8% and an increase in operating expenditures of 8.2%. The increases in revenues and expenditures were primarily due to increased recycled water sales. Capital project expenditures were approximately $2.9 million less than the prior year.

When comparing to Fiscal Year 2018-19 Budget estimates through the first quarter, actual operating expenditures were approximately $484,000, or 11.1%, below budget estimates, primarily due to lower than expected energy, chemical, and sprayfield costs as well as decreased maintenance labor hours. Capital project expenditures were approximately

$95,000, or 10.7%, below budget estimates, primarily due to the timing of expenditures for planned projects.

Prepared by: Angela Saccareccia, Finance Manager

ATTACHMENTS:

Attachment A
Attachment B

Joint Powers Authority Operations

Quarterly Update - Comparison to Budget & Prior Year at September 30, 2018

	FY 17-18 Actual YTD	FY 18-19 Budget YTD	FY 18-19 Actual YTD
Total Operating Revenues	$ 705,104	$ 937,992	$ 760,416
RW Pump Station	385,688	530,241	366,225
RW Tanks & Reservoirs	14,717	34,102	18,505
RW System Operations	8,483	10,814	5,919
RW Distribution	5,673	23,406	7,230
Sewer	23,093	34,152	30,540
Waste Water Treatment	1,831,436	2,117,159	1,756,627
Composting	1,027,480	1,278,891	1,305,095
Centrate Treatment	73,829	82,812	53,010
Adminstration	214,982	253,919	337,508
Total Operating Expenses	3,585,381	4,365,496	3,880,659
Net Operating (Expenses)	$ (2,880,277)	$ (3,427,504)	$ (3,120,243)

Joint Powers Authority Operations
Quarterly Update - Comparison to Budget & Prior Year at September 30, 2018

	FY 17-18 Actual YTD	FY 18-19 Budget YTD	FY 18-19 Actual YTD
Las Virgenes Share:			
Total Revenues			
Operating Revenues	$ 497,803	$ 662,222	$ 536,854
Total Revenues	497,803	662,222	536,854
Total Expenses			
Operating Expenses	$ 2,470,328	$ 2,924,063	$ 2,673,774
Capital Project Expenses	2,633,824	633,066	565,466
Total Expenses	5,104,152	3,557,129	3,239,240
Net (Uses) of Funds - LV	$ (4,606,348)	$ (2,894,907)	$ (2,702,386)
Triunfo Share:			
			$ (2,702,386)
Total Revenues			
Operating Revenues	$ 207,301	$ 275,770	$ 223,562
Total Revenues	207,301	275,770	223,562
Total Expenses			
Operating Expenses	$ 1,115,053	$ 1,441,433	$ 1,206,885
Capital Project Expenses	1,096,805	263,628	235,477
Total Expenses	2,211,858	1,705,061	1,442,362
Net (Uses) of Funds - TSD	$ (2,004,558)	$ (1,429,291)	$ (1,218,800)
Total JPA Net (Uses) of Funds	$ (6,610,906)	$ (4,324,198)	$ (3,921,186)

Joint Powers Authority Operations

Quarterly Update - Comparison to Budget & Prior Year at September 30, 2018

	FY 17-18 Actual YTD	FY 18-19 Budget YTD	FY 18-19 Actual YTD
Total Revenues			
Operating Revenues	$ 705,104	$ 937,992	$ 760,416
Total Revenues	705,104	937,992	760,416
Total Expenses			
Operating Expenses	$ 3,585,381	$ 4,365,496	$ 3,880,659
Capital Project Expenses	3,730,629	896,694	800,943
Other	-	-	-
Total Expenses	7,316,010	5,262,190	4,681,602
Net (Uses) of Funds	$ (6,610,906)	$ (4,324,198)	$ (3,921,186)
Las Virgenes Share	(4,667,300)	(2,894,907)	(8,102,634)
Triunfo Share	(1,943,606)	(1,429,291)	4,181,448

Las Virgenes - Triunfo Joint Powers Authority
Capital Improvement Project Status
September 30, 2018

Job # - Description	*LV %*	*TSD %*	*Total Project Appropriations*	*Prior Year Expenditures*	*Current Year Expenditures*	*Total Project Expenditures*	*Project Balance*	*LV Balance*	*TSD Balance*
Completed Projects									
10565 - Rancho LV:Digester Cleang/Rpr	**70.6%**	**29.4%**	**$1,866,751**	**$1,499,493**	**$402,075**	**$1,901,568**	**($34,817)**	**($24,581)**	**($10,236)**
Clean out and evaluate the condition of digesters that have been in service for more than 20 years.									
Additional appropriation $77,257 approved by LVMWD Board 8/28/2018, Item 7B									
Total Completed Projects			***$1,866,751***	***$1,499,493***	***$402,075***	***$1,901,568***	***($34,817)***	***($24,581)***	***($10,236)***
Projects to complete by June 30, 2019									
10589 - WIMS Software Implementation	**70.6%**	**29.4%**	**$32,350**	**$59,965**	**$0**	**$59,965**	**($27,615)**	**($19,496)**	**($8,119)**
Purchase and installation of water information management solution (WIMS).									
10656 - Rancho Reliability Imprv 18-19	**70.6%**	**29.4%**	**$100,000**	**$0**	**$0**	**$0**	**$100,000**	**$70,600**	**$29,400**
Replace or rehabilitate facilities and equipment at the Rancho facility based on failure, exceedance of useful life, or obsolescence. Specific projects are identified for each fiscal year.									
10657 - Tapia WRF Relib Imprv FY18-19	**70.6%**	**29.4%**	**$100,000**	**$0**	**$72,216**	**$72,216**	**$27,784**	**$19,616**	**$8,168**
Based on analysis of break history, facility age, pipe material, location and other distribution system indicators, this project will fund specific repair and/or replacement projects.									
10687 - Rancho Lighting EfficiencyUpgd	**70.6%**	**29.4%**	**$362,968**	**$0**	**$0**	**$0**	**$362,968**	**$256,255**	**$106,713**
Rancho Lighting Efficiency Upgrade									
Appropriation $362,968 approved by JPA Board 9/5/2018, Item 6B									
Total Projects to complete by June 30, 2019			***$595,318***	***$59,965***	***$72,216***	***$132,181***	***$463,137***	***$326,975***	***$136,162***
Multi-Year Projects									
10564 - Centrate Equalization Tank	**70.6%**	**29.4%**	**$2,343,008**	**$2,056,871**	**$2,621**	**$2,059,492**	**$283,516**	**$200,162**	**$83,354**
Construct a centrate equalization tank at the centrate treatment facility at Rancho.									
10608 - Rancho Amndmnt Bin&Convync Mod	**70.6%**	**29.4%**	**$1,688,650**	**$176,175**	**$28,759**	**$204,934**	**$1,483,716**	**$1,047,503**	**$436,213**
The project consists of installing a new smaller amendment bin and modification to the conveyor system to simplify the amendment conveyance process.									

Job # - Description	LV %	TSD %	Total Project Appropriations	Prior Year Expenditures	Current Year Expenditures	Total Project Expenditures	Project Balance	LV Balance	TSD Balance
Multi-Year Projects									
10611 - Tapia Duct Bank Infrstrc Upgrd	**70.6%**	**29.4%**	**$160,000**	**$0**	**$0**	**$0**	**$160,000**	**$112,960**	**$47,040**
Add new duct bank from the front gate to the chemical building with several intercept points along the way.									
10619 - Summer Season 2013 TMDL Compln	**70.6%**	**29.4%**	**$640,000**	**$60,806**	**$50,848**	**$111,654**	**$528,346**	**$373,012**	**$155,334**
Construction of a 1MGD "side stream" treatment facility at Tapia to treat stream flow augmentation discharges to the 2013 TMDL limits of 1 mg/L total nitrogen and 0.1 mg/L total phosphorous. The cost estimate is based on membrane technology.									
10626 - Process Air Improvements	**70.6%**	**29.4%**	**$3,740,584**	**$345,623**	**$64,048**	**$409,671**	**$3,330,913**	**$2,351,625**	**$979,288**
The first phase is to replace the existing Roots blowers with new, high effiency, single stage blowers. To replace the air diffusers in the aeration basins with new full floor mounted fine bubble diffusers.									
10629 - Cny Oaks Prk RW Main Extension	**70.6%**	**29.4%**	**$399,780**	**$6,649**	**$0**	**$6,649**	**$393,131**	**$277,550**	**$115,581**
This extension will serve the City of Westlake Village's Oak Canyon Park and eliminate a long private service line to Yerba Buena School. Funding from Prop 84 IRWM 2015									
10635 - PURE WATER PROJECT	**70.6%**	**29.4%**	**$4,362,273**	**$94,033**	**$21,956**	**$115,989**	**$4,246,284**	**$2,997,877**	**$1,248,407**
This project funds preliminary studies, outreach, CEQA analysis, preliminary design and final design. Project 10637 Facility Siting Study was completed in prior year for $180,777. Project 10650 Land Acquisition was completed in prior year for $2,109,359									
10636 - Mixing & Dilution Study	**70.6%**	**29.4%**	**$389,186**	**$259,078**	**$1,043**	**$260,121**	**$129,065**	**$91,120**	**$37,945**
sub project of 10635 Pure Water Project									
10638 - Demonstration Project	**70.6%**	**29.4%**	**$817,764**	**$215,863**	**$72,903**	**$288,766**	**$528,998**	**$373,473**	**$155,525**
sub project of 10635 Pure Water Project									
10653 - Tapia Rehab FY17-18	**70.6%**	**29.4%**	**$2,105,700**	**$146,285**	**$65,779**	**$212,064**	**$1,893,636**	**$1,336,907**	**$556,729**
Combine projects 10647, 10648, 10649 for ease of administration of the projects. Concrete repair and installation of protective coatings Replace ten RAS gates Replace grit piping and grit valves as well as primary skimming pipe									
10654 - Hilton Fnd Solar Carport Systm	**70.6%**	**29.4%**	**$300,000**	**$1,184**	**$0**	**$1,184**	**$298,816**	**$210,964**	**$87,852**
Relocation and installation of Solar Carport System donation from Conrad N. Hilton Foundation									
10658 - Tapia Sluice Gate&Drv Rpl18-19	**70.6%**	**29.4%**	**$556,600**	**$0**	**$0**	**$0**	**$556,600**	**$392,960**	**$163,640**
Replace existing gates in the tanks and channels at Tapia as well as drive mechanisms for flights and chains.Replace ten RAS gates in FY18-19.									
10661 - A/B Bus Electrical Modificatn	**70.6%**	**29.4%**	**$100,000**	**$0**	**$0**	**$0**	**$100,000**	**$70,600**	**$29,400**
Study the feasibility of reconfiguring the Tapia electrical switch gear and then hire electrical team to make the modifications.									

Job # - Description	LV %	TSD %	Total Project Appropriations	Prior Year Expenditures	Current Year Expenditures	Total Project Expenditures	Project Balance	LV Balance	TSD Balance
Multi-Year Projects									
10665 - Cordillera Tank Rehab	**70.6%**	**29.4%**	**$1,201,267**	**$0**	**$16,166**	**$16,166**	**$1,185,101**	**$836,681**	**$348,420**
Rehabilitation including interior and exterior coating, valve and appurtenance upgrades and replacements, restoration of deteriorated asphalt, and work to ensure up-to-date compliance for safety and water quality equipment.									
10666 - Calabasas Prk RW Main Extensn	**70.6%**	**29.4%**	**$320,000**	**$0**	**$0**	**$0**	**$320,000**	**$225,920**	**$94,080**
Install approximately 1,200 LF of 6-8 inch pipeline to loop the existing recycled water system.									
10667 - Tapia Headworks White Room	**70.6%**	**29.4%**	**$55,000**	**$0**	**$0**	**$0**	**$55,000**	**$38,830**	**$16,170**
Modification or replacement is needed for the floor plates and steel framing floor plate supports in the white room located at Tapia's headworks building.									
10668 - RLV Storm Wtr Divsn Strctr Rpl	**70.6%**	**29.4%**	**$30,000**	**$0**	**$0**	**$0**	**$30,000**	**$21,180**	**$8,820**
Replacement of the two storm water diversion structures at the Rancho Las Virgenes Composting Facility. Increase the size and length of the farm field discharge pipeline.									
10669 - Dev Tour Seating Area @ Tapia	**70.6%**	**29.4%**	**$25,000**	**$0**	**$0**	**$0**	**$25,000**	**$17,650**	**$7,350**
Develop tour seating area at Tapia adjacent to the control building									
10670 - Centrate 20" Valve Repair	**70.6%**	**29.4%**	**$150,000**	**$0**	**$0**	**$0**	**$150,000**	**$105,900**	**$44,100**
Repair buried 20-inch Miliken valve at the centrate facility.									
10680 - RLV Digester Cleaning & Repair	**70.6%**	**29.4%**	**$225,000**	**$0**	**$2,529**	**$2,529**	**$222,471**	**$157,065**	**$65,406**
Clean out and make all necessary repairs to digesters #2. the scope of repairs is based on the recently completed rehabilitation of digester # 1.									
10682 - RLV: FOG Receiving Fac FY18-19	**70.6%**	**29.4%**	**$30,000**	**$0**	**$0**	**$0**	**$30,000**	**$21,180**	**$8,820**
To conduct a study to determine the market for local high strength wastes (food waste, fats, oils, and grease (FOG)) that can be fed into the third digester. After completion of the study, the installation of facilities for receiving and conveying fats, o									
Total Multi-Year Projects			***$19,639,812***	***$3,362,567***	***$326,652***	***$3,689,219***	***$15,950,593***	***$11,261,119***	***$4,689,474***
Projects on Hold									
10520 - SCADA System Communictn Upgrd	**70.6%**	**29.4%**	**$93,100**	**$32,447**	**$0**	**$32,447**	**$60,653**	**$42,821**	**$17,832**
Upgrade the JPA owned portion of the supervisory control and data acquisition system (SCADA) system to an Ethernet based radio network and provide additional data paths for system redundancy.									
10567 - Progmble Logic Contrlr Upgrd	**70.6%**	**29.4%**	**$332,850**	**$0**	**$0**	**$0**	**$332,850**	**$234,992**	**$97,858**
Replace obsolete programmable logic controllers and upgrade other electrical equipment at Tapia.									
Total Projects on Hold			***$425,950***	***$32,447***	***$0***	***$32,447***	***$393,503***	***$277,813***	***$115,690***

Job # - Description	LV %	TSD %	Total Project Appropriations	Prior Year Expenditures	Current Year Expenditures	Total Project Expenditures	Project Balance	LV Balance	TSD Balance
Totals			$22,527,831	$4,954,472	$800,943	$5,755,415	$16,772,416	$11,841,326	$4,931,090
Totals: Las Virgenes MWD			$15,904,649	$3,497,857	$565,466	$4,063,323	$11,841,326		
Totals: Triunfo Sanitation District			$6,623,182	$1,456,615	$235,477	$1,692,092	$4,931,090		

November 5, 2018 JPA Board Meeting

TO: JPA Board of Directors

FROM: General Manager

Subject : 2019 JPA Board Meeting Calendar

SUMMARY:

The JPA Board regularly meets on the first Monday of each month. When the first Monday of a month falls on a holiday, the Board meeting is held the following day. As previously approved by the Board, the March and September JPA Board meetings are held at the Oak Park Library. Attached for reference is the 2019 JPA Board Meeting Calendar.

RECOMMENDATION(S):

Review the 2019 JPA Board Meeting Calendar and make any scheduling adjustments.

FISCAL IMPACT:

No

ITEM BUDGETED:

No

DISCUSSION:

The 2019 JPA Board meeting calendar is presented to review for any potential conflicts.

The May 6, 2019 JPA Board Meeting is scheduled the same week as the ACWA Spring Conference scheduled May 7 through 10, 2019. The first Monday in September 2019 falls on the Labor Day holiday; therefore, the regular meeting will be held on Tuesday, September 3, 2019. The December 2, 2019 JPA Board Meeting is scheduled the same week as the ACWA Fall Conference scheduled December 3 through 6.

Prepared by: Josie Guzman, Executive Assistant/Clerk of the Board

ATTACHMENTS:

2019 JPA Meeting Calendar

2019

JANUARY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7 JPA	8 LV	9	10	11	12
13	14	15	16	17	18	19
20	21	22 LV	23	24	25	26
27	28	29	30	31		

CASA Winter Conf. Indian Wells 01/23 – 01/25

FEBRUARY

S	M	T	W	T	F	S
					1	2
3	4 JPA	5	6	7	8	9
10	11	12 LV	13	14	15	16
17	18	19	20	21	22	23
24	25	26 LV	27	28		

CASA Washington DC Forum 02/25 – 02/27
ACWA Washington DC 02/26 – 02/28

MARCH

S	M	T	W	T	F	S
					1	2
3	4 JPA	5	6	7	8	9
10	11	12 LV	13	14	15	16
17	18	19	20	21	22	23
24	25	26 LV	27	28	29	30
31						

APRIL

S	M	T	W	T	F	S
	1 JPA	2	3	4	5	6
7	8	9 LV	10	11	12	13
14	15	16	17	18	19	20
21	22	23 LV	24	25	26	27
28	29	30				

Passover 04/20 -04/21 & 04/26 – 04/27
(begins sundown day before)

MAY

S	M	T	W	T	F	S
			1	2	3	4
5	6 JPA	7	8	9	10	11
12	13	14 LV	15	16	17	18
19	20	21	22	23	24	25
26	27	28 LV	29	30	31	

ACWA Spring Conf. Monterey 05/07 – 05/10

JUNE

S	M	T	W	T	F	S
						1
2	3 JPA	4	5	6	7	8
9	10	11 LV	12	13	14	15
16	17	18	19	20	21	22
23	24	25 LV	26	27	28	29
30						

Shavuot 06/09 – 06/10 (begins sundown day before)

	LVMWD Meeting
	JPA Meeting
	District Holiday

2019

JULY						
S	M	T	W	T	F	S
	1 JPA	2	3	4	5	6
7	8	9 LV	10	11	12	13
14	15	16	17	18	19	20
21	22	23 LV	24	25	26	27
28	29	30	31			

AUGUST						
S	M	T	W	T	F	S
				1	2	3
4	5 JPA	6	7	8	9	10
10	12	13 LV	14	15	16	17
18	19	20	21	22	23	24
25	26	27 LV	28	29	30	31

CASA Annual Conf. San Diego 08/21 – 08/23

SEPTEMBER						
S	M	T	W	T	F	S
1	2	3 JPA	4	5	6	7
8	9	10 LV	11	12	13	14
15	16	17	18	19	20	21
22	23	24 LV	25	26	27	28
29	30					

Rosh Hashana 09/30 - 10/01 (begins sundown day before)

OCTOBER						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7 JPA	8 LV	9	10	11	12
13	14	15	16	17	18	19
20	21	22 LV	23	24	25	26
27	28	29	30	31		

Yom Kippur 10/09; Sukkot 10/14 – 10/15;
Shmini Atzeret 10/21; Simchat Torah 10/22
(all begin sundown day before)

NOVEMBER						
S	M	T	W	T	F	S
					1	2
3	4 JPA	5	6	7	8	9
10	11	12 LV	13	14	15	16
17	18	19	20	21	22	23
24	25	26 LV	27	28	29	30

DECEMBER						
S	M	T	W	T	F	S
1	2 JPA	3	4	5	6	7
8	9	10 LV	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

ACWA Fall Conf. San Diego 12/03 – 12/06
Chanukah 12/23 - 12/30 (begins sundown day before)

	LVMWD Meeting
	JPA Meeting
	District Holiday

November 5, 2018 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Rancho Lighting Efficiency Upgrade Project: Approve Incentive Agreement with Onsite Energy

SUMMARY:

Onsite Energy, under contract with Southern California Edison (SCE), is facilitating SCE's Local Capacity Requirements (LCR) Program. As described on the attached information sheets, the LCR Program provides incentives to industries and businesses that permanently reduce electrical demand in SCE's service areas. The LCR Program provides a $750 incentive per kilowatt of electrical demand reduction (see attached Onsite LCR Incentive Agreement).

The Rancho Lighting Efficiency Upgrade Project qualifies for an incentive through the LCR Program. The total incentive for the Rancho Lighting Efficiency Upgrade Project is estimated to be between $30,000 and $50,000, representing a minimum 30% reduction in the electrical demand at Rancho for lighting usage. The actual incentive amount will be based on final inspection and independent verification by Onsite Energy after the completion of the project.

RECOMMENDATION(S):

Authorize the Administrating Agent/General Manager to execute an LCR Customer Incentive Agreement with Onsite Energy for the Rancho Lighting Efficiency Upgrade Project.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

This action will result in a financial inventive estimated to be between $30,000 and $50,000.

DISCUSSION:

Staff previously received a $1,062 SCE incentive for the Rancho Lighting Efficiency Upgrade Project. However, the LCR Program offers a much larger incentive and can be accepted such that it would supersede the previous, smaller incentive. The LCR Program incentive is initially calculated based on the reduction of electricity demand from the newly proposed LED lights that will be used for the project. The incentive will subsequently be adjusted following a verification and monitoring period after the completion of construction. During the verification and monitoring period, Onsite Energy will measure the actual electrical output of a small, random sample of the LED lights installed together with the actual usage hours of the new LED lights to determine the final incentive amount for the project. A final verification and inspection report will be submitted to SCE for approval. SCE will have 30 days to approve the report, and the incentive payment will be made 30 to 45 days after the approval.

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

ATTACHMENTS:

SCE LCR Information Sheets
Onsite LCR Customer Incentive Agreement



Options for Your Business to Go Green with SCE and Energy Solutions Providers

New offers to create a cleaner grid of the future — together

Southern California Edison (SCE) is evolving the California electrical grid to a cleaner, more advanced version to support more customer choice with clean energy resource options. We contracted with various energy solutions providers, now available in the Western Los Angeles basin, to help your business better manage its energy use through a variety of non-carbon-emitting clean energy solutions such as energy efficiency, demand response, distributed solar photovoltaic generator, and energy storage.

These energy solutions providers may be reaching out to inform you about their offerings and how they may meet your business needs.

These companies offer clean resource options, which can lessen dependence on natural gas generation in Southern California. In addition to existing SCE customer contracts and programs, these providers' programs, will offer additional options to help SCE's customers manage their electricity needs.

Participation in these solutions may include:

- installing more energy efficient systems,
- shifting electricity use to off-peak times of day, and/or
- installing solar or energy storage to offset your energy use.

The energy service providers under contract with SCE for specific products and services are listed on the back page. Please contact your SCE representative if you have any questions and to identify all the available options to help meet your energy needs.

You may also visit **on.sce.com/businessincentives** for more information on SCE's existing contracts with energy solutions providers, as well as other customer programs and services.

Customers may also contact the Business Customer Solutions Team (BCST):
1-844-834-8761

Energy Solutions Providers:
Advanced Microgrid Solutions
Generate Capital
NRG
Onsite Energy
Stem
Sterling Analytics
SunPower

For more information about SCE's programs, please visit
on.sce.com/businessincentives

For more information about dual enrollment in Demand Response programs, please visit
on.sce.com/drpdeo

SOUTHERN CALIFORNIA EDISON®
An *EDISON INTERNATIONAL*® Company

Options for Your Business to Go Green with SCE and Energy Solutions Providers

Advanced Microgrid Solutions – Armada™ Asset Management Platform combines energy storage & advanced analytics to control energy usage and reduce costs. Fully optimizes solar, storage & other generation assets to drive maximum revenues. Permanent demand reduction and demand response without impacting operations. Performance contracting with guaranteed cost savings and no capital outlay.

Email: info@advmicrogrid.com
Phone: 415-638-6146
www.advmicrogrid.com

The NRG-Lockheed Martin Energy Efficiency program leverages energy efficiency equipment associated with compressed air, refrigeration, lighting and process systems (cooling, heating, and material transport) that will result in decreased energy use for SCE's commercial and industrial customers.

Douglas J. Paschall
Email: douglas.j.paschall@lmco.com
Phone: 714-704-9058 ext.109

Onsite Energy provides identification and implementation of energy efficiency projects such as lighting, compressed air, process improvements and HVAC optimization and controls that result in decreased energy use for SCE's commercial and industrial customers.

Richard T. Sperberg
Email: rsperberg@onsitenergy.com
Phone: 760-476-4140
www.onsitenergy.com

Ice Bear, brought to you by NRG, provides energy storage for 5-20 ton commercial air conditioning units. By freezing water at night, it uses the energy stored in ice to cool buildings during peak hours and reduce energy consumption. The storage units are designed to serve all or a portion of the electrical consumption by displacing the AC unit compressors to provide cooling for the sites.

Tony Huffman
Email: thuffman@ice-energy.com
Phone: 949-351-6752
www.nrg.com/icebear

The Generate Capital Cool2Save program featuring Evaporcool® provides a way to increase the efficiency of existing air-cooled HVAC systems while reducing electrical energy usage. Best suited for users of large packaged rooftop units and air-cooled chillers, Evaporcool's pre-cooling technology reduces peak demand through improving HVAC efficiency.

Steve Dixon
Email: sdixon@evaporcool.com
Phone: 201-706-1020
www.evaporcool.com

Sterling Analytics provides LED lighting retrofits and other solutions including light HVAC with variable frequency drives, damper controls and energy management systems (EMS) to improve energy efficiency and sustainability.

Mike Cerella
Email: mcarella@sterlingplanet.com
Phone: 608-332-6343
www.sterling-analytics.com

NRG Curtailment Solutions' demand response program provides an automated method to reduce the commercial and industrial customers' use of electricity during peak demand periods when needed to support the electrical grid.

Robert Hanvey
Email: dr-info@nrg.com
Phone:877-711-5453
demandresponse.nrg.com

Stem provides energy storage and energy management solutions to help customers reduce consumption of electricity from the grid, manage load in support of SCE's demand response programs, and monitor real-time energy use.

Email: info@stem.com
Phone: 415-937-7836
www.stem.com

SunPower installs onsite solar power systems that will help reduce the overall energy consumption from the grid.

Robert Rogan
Email: robert.rogan@sunpower.com
Phone: 510-260-8599
www.sunpower.com

LCR Customer Incentive Agreement

CUSTOMER INFORMATION			
Company Name Las Virgenes Municipal Water District	**Mailing Address** 4232 Las Virgenes Road Calabasas, CA 91302	**Contact**	John Zhao
		Phone Number	
		Email Address	jzhao@lvmwd.com
PROJECT INFORMATION			
Project Name Las Virgenes Municipal Water District	**Site Address** 4232 Las Virgenes Road Calabasas, CA 91302	**Site Contact**	John Zhao
		Phone Number	
		Email Address	jzhao@lvmwd.com
Project Description (check all that apply)			
☒- Lighting Retrofit ☐- Compressed Air ☐- HVAC	☐- Other (describe):	**Incentive Rate**	$ 750 /kW*
		Contract Ref #	408005
Installation Deadline 05/02/19	**Agreement Termination** 12/27/24	**LCR Project #**	LCR05-24

* Incentive rate applies to verified Capacity Reduction per Preliminary Post-Installation Inspection Report (PPIIR)

This Agreement is entered into by and between Onsite Energy Corporation ("ONSITE") and Customer identified above ("Customer"). ONSITE and Customer may be individually referred to as a "Party" and collectively as the "Parties." ONSITE shall pay Customer the Incentive in accordance with the Terms and Conditions, which are make part of this Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the date set forth below.

CUSTOMER:

By: _____ Printed: _____

Date: _____ Title: _____

ONSITE ENERGY CORPORATION:

By: _____ Printed: Richard T. Sperberg

Date: _____ Title: President/CEO

CUSTOMER CONSENT TO ASSIGNMENT OF INCENTIVES:

Customer hereby assigns all Incentives associated with this Agreement to the Assignee as identified below. Customer understands that it is responsible to comply with the remainder of its rights and duties, including Incentive repayment obligations, as provided for in this Agreement.

Customer Signature: _____ Printed: _____

Date: _____ Title: _____

Assignee Name: _____

Assignee Address: _____

TERMS AND CONDITIONS:

1. INSPECTIONS AND SITE ACCESS - Customer shall ensure ONSITE, Southern California Edison ("SCE") and their respective consultants have reasonable access for all inspections required under the LCR Program ("Program"), including, but not limited to, the following: 1) Pre-installation equipment inspection to establish the existing baseline equipment and energy usage; 2) Primary post-installation inspection to verify installed equipment, and to perform Measurement and Verification ("M&V") in accordance with the M&V Plan; 3) Ongoing inspections as required by the Program (up to 2 per year) through Agreement Termination Date; and 4) Inspection for any other reason that ONSITE reasonably deems necessary.

2. PROJECT DESCRIPTION - This Agreement is limited to the specific project ("Project") as named and described above.

3. DOCUMENTS INCORPORATED BY REFERENCE - The following documents are hereby incorporated by reference and made part of this Agreement:

A. The Project installation contract between Customer and its installer;
B. M&V Plan as approved by ONSITE and SCE.

4. ELIGIBILITY – ONSITE's Program funding is limited and is available on a first-come, first-served basis until Program funds are no longer available. Funds will be reserved only upon execution of this Agreement by both parties. Projects must meet the following requirements to be eligible for payment of Incentives:

A. Project Site must be an electric service customer of SCE;
B. Customer must pay the Public Purpose Program ("PPP") surcharge on its monthly electric service bills to SCE;
C. Projects must be completed using a measured savings approach for entire duration of the LCR Agreement Term in accordance with applicable M&V Plan, and are subject to approval by SCE;
D. Projects must exceed 2013 Title 24 energy efficiency requirements, if applicable, set by the California Energy Commission ("CEC") applicable at the time this Agreement is signed;
E. Projects must be installed by the Installation Deadline identified above.

5. SUBMITTAL REQUIREMENTS FOR PAYMENT - Customer shall submit, or permit ONSITE to produce, the documents described below prior to being eligible for payment of any Incentives. Required documents include the following:

A. This completed and executed Agreement;
B. Fully executed installation contract between Customer and installer;
C. Any other documents related to the Project, Project Site, measures, energy savings or otherwise reasonably requested by ONSITE.

6. PAYMENTS & INSTALLATION - Payment of Program Incentives ("Incentives") will be made only after all Program requirements are met by Customer, including approval

by SCE of capacity (kW) reduction.

ONSITE retains sole discretion to determine the appropriate baseline values and energy savings calculations used to determine Incentive payments. The total Incentives payment will be at the Incentive Rate as provided herein based on the measured energy/capacity savings as measured in accordance with the M&V Plan approved by SCE.

ONSITE will make the applicable Incentive payment(s) to the Customer, only after all required and/or requested documents have been submitted and approved by ONSITE and SCE, and the appropriate inspection(s) of the Project have been completed to ONSITE's satisfaction.

All Projects and/or measures must be installed and fully operational by the Installation Deadline. ONSITE reserves the right to require the return of previously paid Incentive payments and/or terminate this Agreement if the Project is not installed and fully operational for entire Term of this Agreement

7. PAYMENT DISQUALIFICATION - Any Incentives received by Customer shall be repaid to ONSITE, in whole or in part, as follows:

A. If Customer fails to pay the PPP surcharge at any time during the Term of this Agreement, Customer shall refund to ONSITE any prorated amount of the Incentive dollars that ONSITE determines must be repaid, based on the energy savings that occurred during the payment of the PPP surcharge.
B. If 1) Customer does not provide ONSITE with 100% of the related Project capacity (kW) reduction, or 2) the energy benefit to ONSITE ceases in any way during the LCR Contract Term, including, but not limited to, Customer and/or the Project Site ceasing to receive electricity service from SCE, the measure, equipment and/or Project ceasing to function, or Customer ceasing the use of the equipment, measure or Project Site, Customer shall refund to ONSITE any prorated amount of the Incentive dollars that ONSITE determines must be repaid, based on the actual period of time for which Customer provided the energy benefit.
C. Customer shall repay any amounts due to ONSITE within thirty (30) calendar days of notification by ONSITE that repayment is required in accordance with Sections 7(A) and/or 7(B) above.

8. REVIEW AND DISCLAIMER – UNLESS ONSITE IS HIRED BY CUSTOMER AS THE PROJECT INSTALLATION CONTRACTOR, ONSITE'S AND/OR ITS CONSULTANTS' REVIEW OF THE DESIGN, CONSTRUCTION, OPERATION OR MAINTENANCE OF THE PROJECT OR ENERGY EFFICIENCY MEASURES ("EEMs") SHALL NOT CONSTITUTE ANY REPRESENTATION AS TO THE ECONOMIC OR TECHNICAL FEASIBILITY, OPERATIONAL CAPABILITY, OR RELIABILITY OF THE PROJECT OR EEMs. CUSTOMER IS SOLELY RESPONSIBLE FOR THE ECONOMIC AND TECHNICAL FEASIBILITY, CONSTRUCTION, OPERATIONAL CAPABILITY AND RELIABILITY OF THE PROJECT AND EEMs. ONSITE MAKES NO REPRESENTATIONS OR WARRANTIES REGARDING THE PROJECT, THE PROGRAM, OR THE INCENTIVES, WHETHER STATUTORY, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, USE OR APPLICATION AND SPECIFICALLY DISCLAIMS ANY SUCH WARRANTY, EXPRESS OR IMPLIED.

9. TERM AND TERMINATION – This Agreement shall become effective upon execution by the parties and shall terminate upon the Agreement Termination Date provided above.

10. ASSIGNMENT - Customer consents to ONSITE's assignment of all of ONSITE's rights, duties and obligations under this Agreement. Customer may elect to assign the Incentives to a third party by signing the Assignment Consent, however such assignment of Incentives shall not release Customer from the remainder of its rights or duties, including any Incentive repayment obligations, under this Agreement without the prior and separate written consent of ONSITE, which shall not be unreasonably withheld.

11. PERMITS AND LICENSES - Customer, at its own expense, shall obtain and maintain and cause its contractors and/or subcontractors to obtain and maintain all licenses and permits required by any federal, state, local, or other governing or regulatory bodies with jurisdiction over the work. Any failure by Customer or its contractors and/or subcontractors to maintain necessary licenses and permits constitutes a material breach of Customer's obligations under this Agreement.

12. INDEMNIFICATION – Unless ONSITE is hired by the Customer as the Project installation contractor, Customer shall indemnify, defend and hold harmless, and release ONSITE, its affiliates, subsidiaries, parent companies, officers, directors, agents and employees, from and against all claims, demands, losses, damages, costs, expenses, and liability (legal, contractual, or otherwise), which arise from or are in any way connected with the installation and operation of the project: (A) injury to or death of persons, including, but not limited to, employees of ONSITE; (B) injury to property or other interests of ONSITE, or any third party; (C) violation of local, state, or federal common law, statute, or regulation, including, but not limited to, environmental laws or regulations; or (D) strict liability imposed by any law or regulation, so long as such injury, violation, or strict liability (as set forth in A through C, above) arises from or is in any way connected with ONSITE's performance of, or failure to perform, this Agreement, however caused, regardless of any strict liability or negligence of ONSITE whether active or passive, excepting only such loss, damage, cost, expense, liability, strict liability, or violation of law or regulation that is caused by the sole negligence or willful misconduct of ONSITE, its officers, managers or employees.

Customer acknowledges that any claims, demands, losses, damages, costs, expenses, and legal liability that arise out of, result from, or are in any way connected with the release or spill of any legally designated hazardous material or waste as a result of the work performed under this Agreement are expressly within the scope of this indemnity without exclusion, and that the costs, expenses, and legal liability for environmental investigations, monitoring, containment, abatement, removal, repair, cleanup, restoration, remedial work, penalties, and fines arising from strict liability, or violation of any local, state, or federal law or regulation, attorney's fees, disbursements, and other response costs incurred as a result of such releases or spills are expressly within the scope of this indemnity.

Customer shall, on ONSITE's request, defend any action, claim or suit asserting a claim that may be covered by this indemnity. Customer shall pay all costs and expenses that may be incurred by ONSITE in enforcing this indemnity, including reasonable attorney's fees. This indemnity shall survive the termination of this Agreement for any reason.

If this Agreement is assigned pursuant to Section 10, Customer agrees that this indemnification shall continue to apply to ONSITE and shall apply to the Assignee.

Notwithstanding the foregoing, if Customer is a federal governmental authority or agency, each party's liability to the other for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be determined in accordance with applicable law.

13. LIMITATION OF LIABILITY – ONSITE shall not be liable for any special, incidental, indirect, or consequential damages arising out of or in connection with the Project, the Program or this Agreement, including without limitation, loss of profits, loss of business, loss of goodwill, loss of use of systems or equipment, or commitments to subcontractors, whether or not such damages were reasonably foreseeable at the time of contracting. In addition, ONSITE's total liability arising out of or in connection with the Project, the Program, or this Agreement shall be limited to the amount of the Incentive paid to Customer.

14. WRITTEN NOTICE - Any written notice, demand or request required or authorized, in connection with this Agreement shall be deemed properly given if delivered in person or sent by nationally recognized overnight courier, electronically by facsimile or email, or First Class Mail, postage prepaid, to the Customer Address above or to ONSITE at the following address: President, ONSITE Energy Corporation, 2701 Loker Ave West, Suite 107, Carlsbad, CA 92010. Notices shall be deemed received (A) if personally or hand-delivered, upon the date of delivery to the address of the person to receive such notice if delivered before 5:00 p.m., or otherwise on the Business Day following personal delivery; (B) if mailed, three (3) Business Days after the date the notice is postmarked; (C) if by facsimile or email, upon electronic confirmation of transmission, followed by telephone notification of transmission by the noticing Party; or (D) if by overnight courier, on the Business Day following delivery to the overnight courier within the time limits set by that courier for next-day delivery.

15. CONFLICTS BETWEEN TERMS - Should a conflict exist between this Agreement and the documents incorporated by reference, this Agreement shall control. Should a conflict exist between an applicable federal, state, or local law, rule, regulation, order or code and this Agreement, the law, rule, regulation, order or code shall control. Each Party shall notify the other immediately upon the identification of any conflict or inconsistency concerning this Agreement.

16. MISCELLANEOUS - This Agreement shall be governed and construed in accordance with the laws of the State of California, without regard to its conflict of laws provisions. If any provision of this Agreement shall be held by a court of competent jurisdiction to be illegal, invalid or unenforceable, the remaining provisions shall remain in full force and effect. This Agreement constitutes the entire agreement and understanding between the Parties as to the subject matter of this Agreement and supersedes all prior agreements, representations, writings and discussions between the Parties, whether oral or written, with respect to the subject matter hereof. No amendment, modification or change to this Agreement shall be binding or effective unless expressly set forth in writing and signed by ONSITE's representative authorized to execute the Agreement.

17. ARBITRATION – This Agreement shall be governed, interpreted and construed under the laws of the State of California. Any controversy or claim arising out of or relating to this Agreement will be settled by binding arbitration with such arbitration service as the parties may agree, and in the absence of such agreement, in accordance with the Commercial Rules of the American Arbitration Association, and judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof. The language of the arbitration shall be in English. In no event will the arbitration of any controversy or the settlement thereof delay the performance of this Agreement. Arbitration hearings will be held in the County of San Diego, California. The prevailing party will be reimbursed for any and all attorney's fees, costs and expenses, including the arbitrator's fees.

18. RELEASE OF INFORMATION – Customer acknowledges that ONSITE will provide SCE with all information requested without further notification to Customer. If Customer refuses to allow SCE, its staff or its contractors and/or consultants to have access to such information, Customer will not be allowed to participate in the Program. ONSITE agrees to mark Project information as confidential before submitting Customer's files to SCE in accordance with California Public Utilities Code Section 583 and CPUC General Order 66-C.

November 5, 2018 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Tapia Process Air Improvements Project: Pre-Purchase of Blowers and Diffusers and Issuance of New Call for Bids

SUMMARY:

On October 1, 2018, the JPA Board rejected all bids for the Tapia Process Air Project. While the bids were found to be competitive, they were significantly higher than the Engineer's Estimate for the project, specifically related to the electrical portion of work. After rejecting the bids, staff and the District's design consultant, Pacific Advanced Civil Engineering, Inc., (PACE), evaluated the bids, interviewed the bidders including the general contractors, electrical subcontractors and equipment suppliers and developed strategies to expedite the project schedule while reducing the overall project cost.

One of the strategies to expedite the project and reduce its cost involves pre-purchasing the high speed turbo blowers and retrievable fine bubble aeration system equipment. The pre-purchase of the equipment will provide the JPA with a variety of benefits including the lowest possible cost for procurement. Pre-purchasing the equipment directly from the suppliers eliminates the contractor markup on the materials and equipment; locks in fixed pricing to eliminate future unforeseen cost increases such as those from tariffs; expedites the overall project schedule by four to six months due to the long lead times for manufacturing of the equipment; and reduces contractor overhead, bonds, insurance, and equipment rental costs, which in combination will provide a cost-savings to the JPA. Additionally, the expedited schedule will allow the JPA to realize the Southern California Edison (SCE) rebate of $155,350.39 available to the project if construction is completed by March 24, 2020.

Staff recommends accepting the bids from Sulzer Pump Solutions (US) Inc. and OTT North America; authorizing the Administering Agent/General Manager to issue purchase orders for the blowers and diffusers; authorize a scope change to PACE for revisions to the plans and specifications based on cost-saving strategies and for additional bidding services; and authorize a new Call for Bids once the revised bid documents have been completed.

RECOMMENDATION(S):

Accept the bids from Sulzer Pump Solutions (US) Inc. and OTT North America; authorize the Administrating Agent/General Manager to issue purchase orders, respectively, in the amount of $837,769.75, for the purchase of high speed turbo blowers and equipment and, in the

amount of $336,291.75, for the purchase of the retrievable fine bubble aeration system equipment; authorize the General Manager to approve a change of scope to Pacific Advanced Civil Engineering (PACE), in the amount of $24,640, to revised the plans and specifications and provide additional bidding services; and authorize a new Call for Bids based on the revised bid package for the Tapia Process Air Improvements Project.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

The total cost of the process air equipment is $1,174,061.50, which includes estimated sales tax of 9.5%. The adopted Fiscal Year 2018-19 JPA Budget provides funding for the project in the amount of $3,293,418. No additional appropriation is required at this time. However, an additional appropriation is expected to be required to fund the total project costs, including the construction contract, a 10% contingency, repair of the process air pipeline, engineering services during construction, and general and administrative costs. Staff will propose an additional appropriation when the project is recommended for a construction award after re-bidding.

DISCUSSION:

Following the rejection of bids, staff and PACE representatives collaboratively developed next steps and strategies intended to reduce the overall project cost. These strategies include the following items that are currently being implemented:

1. Clarifying the electrical scope of work to reconcile the difference in cost between the Engineer's Estimate and bids received for the electrical portion of work.

- The general contractors and electrical subcontractor have been contacted and interviewed.
- The Plans and specifications will be revised to reflect uncertainties and variance between the contractors' understanding of the scope of work based on feedback received from the interviews.
- The project team will discuss value engineering opportunities and changes to the scope of work to reduce costs.
- Staff will encourage and promote electrical sub-contractors to attend the pre-bid meeting and job walk to have a better understanding of the scope of work and field conditions to reduce uncertainties.

2. Promoting competitive bidding among electrical contractors since only two electrical sub-contractors were utilized by the six general contractors.

- Staff reached out to local and experienced electrical contractors to notify them of the

project.
- General feedback concluded that many electrical contractors are in high demand and not interested in low-bid contracts at this time. This high demand has inflated public bidding pricing.

3. Pre-purchasing Blower and Diffusers

- Eliminate contractor mark-up.
- Expedite project schedule by four to six months, which equates to a 40% reduction in contract duration.
- Reduction in overall construction schedule, which reduces contractor overhead, bonds, insurance and equipment rental costs.
- Locked-in fixed pricing eliminates exposure to future tariffs and other unforeseen cost increases.

4. Performing SCADA programming and integration through the use of a local, experienced consultant familiar with JPA facilities.

- The programming and integration scope of work will be removed from the bid documents. The JPA will perform the work through the use of a local integration consultant familiar with the Tapia Water Reclamation Facility.
- Adding a local integration consultant to the project team will streamline coordination with the design consultant, allowing a clear understanding and scope of work, which will reduce overall cost to perform this work.

The proposal submitted by OTT North America includes a 12.7% price increase, which equates to $33,204, as a result of an unforeseen tariff that was imposed on the steel material used by its supplier. The increase in cost was not included in the original bids received; however, the vendor notified the District of the expected increase prior to the bid opening date and noted that the item would have needed reconciliation regardless of the decision to award the project. The pricing for the blowers and diffusers includes the costs for providing the required performance bond, FOB shipping to the project site, as well as 9.5% for Los Angeles County sales tax on the goods and services portion of the equipment. The equipment pre-purchase proposals include an exit strategy for the JPA in the unlikely event that the project does not proceed. Only a 10% commitment is required from the vendors to authorize the shop drawing and submittal preparation for procurement of the equipment. Further commitment by staff will be based upon the JPA's decision to proceed with awarding the project based upon the bids received.

The alternative to not proceed with the project presents challenges and costs due to the age of the existing blowers and diffusers as well as their inefficiencies, which must be considered. A significant investment would be required to rehabilitate and maintain the existing equipment, which includes both electrical and mechanical components. Many of the parts for the existing Roots blowers are no longer available and require custom fabrication that is costly and challenging when needed. In addition, by not proceeding with the project, an annual energy cost-savings of $156,124 that the new higher efficiency blowers and diffusers would provide would not be realized.

Prepared by: Eric Schlageter, P.E., Senior Engineer

ATTACHMENTS:

Blower Proposal
Diffuser Proposal
PACE Change in Scope

SULZER

QUOTATION

Attn: Eric Schlageter
Company: Las Virgenes Municipal Water District
Ph No.: (818) 251-2142
E-Mail: ESchlageter@lvmwd.com

Rick Barile
Company: Sulzer Pump Solutions (US) Inc.
Ph No.: (503) 210-8136
E-Mail: Rick.Barile@sulzer.com

Prepared By: Jose Prieto
Ph No.: (203) 514-4296

Subject: Tapia WRF, Calabasas, CA

Quote No.
2017-MUN-112 - Rev 2
DATE
10/16/2018

Prices are in USD
FCA: Simpsonville, SC
Sulzer's Preliminary General Commercial Comments Apply
Delivery: To Be Advised on Notice to Proceed
Submittals: 2 - 4 weeks
Validity: 6 months

Item	Qty	Description	Subtotal
1		**High Speed Turbo Blowers**	
		Configuration is up to 2 operating plus 1 standby	
	3	Turbo Compressor HST 40-U400-1-L-48, 480/3/60	
	1	Master Control Unit (MCU)	
		Inlet Accessories	
	3	Inlet Filter (INF), Process Air	
	3	Inlet Filter Adapter (used w/ INF & Ductwork only) - 629.3 mm Dia Duct	
	3	Inlet Silencer (used w/ Ductwork only) - 630 mm Dia x 630 mm Dia	
	3	Inlet Collar Flange (used w/ Ductwork only) - DN 600 x 630 mm Dia	
	3	Inlet Adaptor Flange (used w/ Inlet Collar Flange only)	
	3	Inlet Bellows Joint (used w/ Flanged Piping) - DN 600 x DN 600	
	3	Inlet Scrap Trap - Wafer, DN 600	
		Outlet Accessories	
	3	Outlet Flexible Joint - DN 250 x DN 250	
	3	Outlet Combined Diffuser Cone Silencer - DN 250 x DN 500	
	3	Back Flow Barrier, Flapper Type - Wafer, DN 500	
	3	Manual Outlet Valve - Wafer, DN 500	
		Other Accessories	
	3	Passive Harmonic Filter (stand alone), NEMA 1, IEEE519 Compliant	
	1	Passive Harmonic Filter Analysis	
	3	Anchor Bolts - Box of 10 - Eight (8) needed for Project	
	3	Adhesive Tube, 11.1 fl oz / 330ML	
	1	Seismic Design Calculations, State of CA PE stamped	
	3	Step-down Transformer, 4160 primary/480 secondary, 500 kVA	
		Spare Parts	
	6	Sets of Inlet Filter Pocket - INF Vert. or Horiz. (4 / blower)	
	6	Sets of Cabinet Cooling Air Filters (4 / blower)	
		Testing - Warranty	
	3	Witness Testing - Per ASME PTC-10	
	27	Additional Test Points - Per ASME PTC-10	
	3	Balancing Report	
	3	Hydrostatic Pressure Test Certificate	
	3	Factory Certificates	
	3	Noise Certificate	
	3	Transport Packaging by Sea	
	3	Accessories Packaging	
	1	Programming support for SCADA integration, 5 Days Maximum	
	1	Travel/Lodging for One (1) Engineer/Owner Personnel for factory witness test	

SULZER

QUOTATION

Attn: Eric Schlageter
Company: Las Virgenes Municipal Water District
Ph No.: (818) 251-2142
E-Mail: ESchlageter@lvmwd.com

Rick Barile
Company: Sulzer Pump Solutions (US) Inc.
Ph No.: (503) 210-8136
E-Mail: Rick.Barile@sulzer.com

Prepared By: Jose Prieto
Ph No.: (203) 514-4296

Subject: Tapia WRF, Calabasas, CA

Quote No.
2017-MUN-112 - Rev 2
DATE
10/16/2018

Prices are in USD
FCA: Simpsonville, SC
Sulzer's Preliminary General Commercial Comments Apply
Delivery: To Be Advised on Notice to Proceed
Submittals: 2 - 4 weeks
Validity: 6 months

Item	Qty	Description	Subtotal
2		**Start-Up Assistance & Training - Freight**	
	1	Commissioning (Start up & Training) for HST, 5 Days Maximum	
	3	Standard Warranty (2 years)	
	1	Freight, USA to Calabasas, CA	
		Please note that Start-Up Assistance & Training & Freight must be	
		included in the final price. These items can not be discounted nor	
		commissioned. Additional Field Services are available at $1,300.00/day	
		Total Air flow Range (SCFM): 13,000 (6,500 per blower)	
		Differential pressure (psi): 7.5 - 8.0	
		Altitude (ft ASL): 494	
		Inlet pressure (psia): 14.44	
		Inlet pressure losses (psi): 0.3	
		Process air inlet temp. range (°F): 32 to 105	
		Relative humidity range (%): 77	
		Site Voltage / Phase / Freq: 480/3/60	
		SULZER ABS will provide the following Type of MCU for this project:	
		CompactLogix PLC-L3 and 10" Panelview Plus 7 HMI color touch screen interface	
		The above MCU shall include the following elements:	
		1) MCU Enclosure, NEMA 4X. Stainless Steel	
		2) Profibus DP Master Comm Card	
		3) Ethernet/IP Communications – between the CPU and HMI	
		and for Inter-PLC/SCADA communications	
		4) Profibus Communications – between the CPU and the HST Blowers.	
		5) System has 3X HST 40 Blower -Profibus DP Protocol, 2X Press Instrument,	
		6X Flow Instr (4-20mA), 6X Flow Control Valves (4-20mA input and output)	
		6X DO Probes.	
		6) Blowers arranged Duty/Assist/Standby, Blower Control Fixed Pressure or Most	
		Open Valve, Aeration Control Modes-DO, Flow or Manual	
		7) Control of a maximum of Three (3) HST Blowers.	
		Total Project NET Price	**$** TO FOLLOW
Alternative financing available on request. Contact Sulzer for details.			

PERFORMANCE BOND
(EXHIBIT A)

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the governing board of [***Las Virgenes Municipal Water District***] (herein "Agency"), on [_____], awarded to [***Name of Principal***], (herein "Principal"), a contract for [***Tapia WRF Process Air Improvement Project***].

WHEREAS, Principal is required under the terms of the contract to furnish a bond for the faithful performance of the contract;

NOW, THEREFORE, the Principal and _____, (herein "Surety"), are held firmly bound unto the Agency, (herein "Agency"), in the penal sum of [_____] dollars ($[_____]) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bond ourselves, our heirs, executors, administrators and successors, jointly and severally and firmly by these promises.

THE CONDITION OF THIS OBLIGATION IS SUCH that if the above-bounden Principal, or its heirs, executors, administrators, successors or assigns shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in the contract, including but not limited to the payment of liquidated damages, and any alteration thereof made as therein provided, on its part to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the Agency, its officers and agents, as therein stipulated, this obligation shall become null and void; otherwise it shall be and remain in full force and virtue.

Surety stipulates and agrees no change, extension of time, alteration, or addition to the terms of the contract, or to the work to be performed thereunder, or the specifications accompanying the same, shall affect its obligation on this bond. Surety waives notice of such change, extension of time, alteration or addition to the terms of the contract, or to the work or to the specifications.

Surety agrees in case suit is brought on this bond, Surety will pay Agency's reasonable attorney fees to be fixed by the court.

IN WITNESS WHEREOF, three identical counterparts of this instrument, each of which shall be deemed an original, have been duly executed by the Principal and Surety above named, on the [_____] day of [_____, _____].

[_____]	[_____]
(Principal)	(Surety)
By: _____	By: _____
	(Attorney-in-fact)

"See next page for additional information"

Performance Bond for Process Guarantee for two (2) years

If we are the successful bidder, Sulzer|ABS will provide a Performance Bond as shown in Exhibit A and will supply a performance guarantee to the Las Virgenes Sanitary District.

The additional cost to provide this Performance Bond has been included in the Exhibit C Capital Costs.

Sulzer Pumps
Wastewater Solutions
ABS USA
140 Pond View Drive
Meriden, CT 06450

REFERENCE LIST (EXHIBIT B)

#	Job Name	Year Completed	Installation Location	Type of Blower	Design Capacity (SCFM & PSI)	Number of Blowers	Contact Name	Phone Number	Contact Email
1	Star Idaho	2010 & 2015	Star Idaho WWTP	HST 6000-1-L-5 & HST2500-U100-1-L-48	3267SCFM ea @ 9 PSI	2 (3rd on order)	Hank Day	208-637-8588	hday@starswd.com
2	Meriden CT WPCF 1st Stage Aeration	2010	Meriden CT WPCF	HST40-U400-1-H-48	2700-8850 SCFM @ 10 PSI	2	Frank Russo	203-630-4261	frusso@meridenct.gov
3	Akron OH-Step Feed Phase 1	2013	City of Akron WRF, Akron OH	HST40-1-L-5	4,000-8,000SCFM ea @7.0-8.5PSI	4	Tom Smith	330-375-2965	TFSmith@akronohio.gov
4	Faribault Water Reclamation Facilty	2011	City ofFaribault MN	2 HST9000-1-H-5 & 1 HST6000-1-H-5	5210(9000) 4140(6000) SCFM/@8.84 PSI	3	Steve McDowell	507-333-0361	smcdowell@ci.faribault.mn.us
5	Dayton Aeration Sys Improvements	2015	Dayton OH	HST40-U400-1-L-48	8,000 SCFM ea. @ 8.0 PSI	4	Paul McCallum	937-423-2934	Paul.MacCallum@daytonohio.gov
6	Palm Desert WRP #10	2015	Palm Desert CA	HST40-U500-1-L-48	8,100 SCFM ea @8.35PSI	6	Jose Pat Medina	(760) 398-2661 x 3650	JPatMedina@cvwd.org

Exhibit C - Equipment Summary

Las Virgenes Municipal Water District - Tapia WRF WWTP - Biological Treatment Process Blowers	Blower 1	Blower 2	Blower 3
Manufacturer/Equipment General Information			
Biological Treatment Process Blowers			
Total # of Units for System	**1**	**1**	**1**
Blower Model Info.	**HST 40-U400-1-L**	**HST 40-U400-1-L**	**HST 40-U400-1-L**
Horsepower per Blower (Hp)	**400**	**400**	**400**
Footprint (ft x ft)/Blower	**5.8 X 8.2**	**5.8 X 8.2**	**5.8 X 8.2**
Min Clearance between Blowers (ft)	**2.6**	**2.6**	**2.6**
Min Clearance between Blowers Enclosure and Surrounding Obstructions (ft)	**2.6**	**2.6**	**2.6**
Weight per Blower (lbs)	**4,300**	**4,300**	**4,300**
Construction/Fabrication Materials			
Biological Treatment Process Blowers			
Blower Enclosure Fabrication Material	**Galvanized Steel**	**Galvanized Steel**	**Galvanized Steel**
Blower Enclosure Material Surface Prep and Paint (Type, DFT)	**Powder Paint, 100m.**	**Powder Paint, 100m.**	**Powder Paint, 100m.**
Blower Enclosure Air Filtration System Fabrication Material	**Cotton/Synthetic Fiber**	**Cotton/Synthetic Fiber**	**Cotton/Synthetic Fiber**
Blower Motor Type (Induction, PMSM, etc.)	**PMSM**	**PMSM**	**PMSM**
Blower Mechanism Type: Impeller/PD Lobes (bi, tri)/Screw	**Impeller**	**Impeller**	**Impeller**
Blower Shaft and Impeller/Lobe/Screw Fabrication Material	**CS/AL Alloy**	**CS/AL Alloy**	**CS/AL Alloy**
Impeller/Lobe/Screw Fabrication (cast / forged)	**Forged**	**Forged**	**Forged**
Blower Scroll/Casing Asembly Material	**Al Alloy**	**Al Alloy**	**Al Alloy**
Bearing Type and Material	**Magnetic/AL Alloy**	**Magnetic/AL Alloy**	**Magnetic/AL Alloy**
Cooling type	**Air Cooled**	**Air Cooled**	**Air Cooled**
Performance Information			
Biological Treatment Process Blowers			
Blower Performance Curve (ACFM "Standardized" and Represented as SCFM) Included in Proposal (y/n)	**Yes**	**Yes**	**Yes**
Max Rotational Speed (RPM)	**16,200**	**16200**	**16200**
Min Air Flow @ 7.5 psi (SCFM)	**See page 18 item 4**	**See page 18 item 4**	**See page 18 item 4**
Max Air Flow @ 8.0 psi (SCFM)	**See page 18 item 4**	**See page 18 item 4**	**See page 18 item 4**
Air Flow and Pressure at BEP (SCFM, psi)	**Proprietary**	**Proprietary**	**Proprietary**
Pressure Loss Through Inlet (psi)	**0.30 per spec (Sulzer Filters are 0.06)**	**0.30 per spec (Sulzer Filters are 0.06)**	**0.30 per spec (Sulzer Filters are 0.06)**
Max Discharge Air Flow at 8 PSI at Standard Cond (SCFM)	**See page 18 item 4**	**See page 18 item 4**	**See page 18 item 4**
Exhibit D -Perfomance Table Completed (y/n)	**Yes**	**Yes**	**Yes**

Capital Cost	
Blowers - Equipment Cost ($)	**648,520.00**
Step down Transformer and Distribution Panel Cost ($)	**82,530.00 (Distribution panel is not included see page 19 item 7)**
Equipment + Transformers Taxes ($)	**69,449.75 (9.5% LA County Tax Rate)**
Perfomance Bond Cost ($)	**12,600.00**
Start-up/ Training Cost ($)	**10,600.00**
Total Freight (FOB to Jobsite) ($)	**14,070.00**
Total Capital Cost + Taxes ($)	**837,769.75**
Pre-Purchase Order Submittal Package	**83,776.98 (10% of total cost)**
Maintenance Contract	
Guaranteed Response Period (hrs)	**96**
Cost of 10-year Service Contract ($)	**60,650.00**
Cost of First 5-yr Extension Option ($)	**27,950.00**
Cost of Second 5-yr Extension Option ($)	**81,440.00**
Controls	
Blower System Communication Protocol	**Profibus (HST blowers to MBPC) / Ethernet/IP (MBPC to SCADA)**
Master Blower Control Panel Included (y/n)	**Yes**
PLC Brand	**Allen Bradley CompactLogix PLC-L3**
Local Control Panel (Blower HMI) included (y/n)	**Yes**
Step down Transformer Required (y/n)	**Yes**
Warranty	
Warranty Period (months)	**24**
Service & Support	
Start-up Period (days)	**5**
Is Spare Parts List Provided? (y/n)	**Yes**
Service Maintenance Contract Included (y/n)	**Yes**
Location of Parts Distribution Center (city, distance in miles to project for each supplied component)	**Easley, SC, 2,400 mi**
Location of Design Support Center (city, distance in miles to project for each supplied component)	**Meriden, CT, 2,900 mi**
Delivery Schedule	
Submittal Period (months)	**1**
Fabrication and Delivery Period (months)	**6-7**

Exhibit D - Blower Performance Table

Blower 1

Design Point	Blower SCFM	Inlet Pressure (psia)	Inlet Filter Pressure Drop (psig)	Discharge Pressure (psig)	Inlet Temp (F)	Relative Humidity (%)	Guaranteed Wire to Air Power (KW)	Blower ICFM (volume Flow)	Isentropic Head (ft-lb/lb)	Density Inlet (lb/ft^3)	Mass Flow (lb/min)
1	5000	14.43	0.3	7.5	32	77	136.1	4737	N/A	N/A	375
2	6000	14.43	0.3	7.5	80	77	177.8	6292	N/A	N/A	450
3	7000	14.43	0.3	7.6	80	77	212.4	7341	N/A	N/A	525
4	8000	14.43	0.3	7.6	80	77	251.7	8389	N/A	N/A	600
5	4500	14.43	0.3	7.6	80	77	138.6	4719	N/A	N/A	337.5
6	5000	14.43	0.3	7.8	80	77	154.6	5243	N/A	N/A	375
7	5500	14.43	0.3	7.8	80	77	168.1	5768	N/A	N/A	412.5
8	6000	14.43	0.3	8	80	77	186.9	6292	N/A	N/A	450.0
9	6500	14.43	0.3	8	105	77	215.1	7220	N/A	N/A	487.5

Blower 2

Design Point	Blower SCFM	Inlet Pressure (psia)	Inlet Filter Pressure Drop (psig)	Discharge Pressure (psig)	Inlet Temp (F)	Relative Humidity (%)	Guaranteed Wire to Air Power (KW)	Blower ICFM (volume Flow)	Isentropic Head (ft-lb/lb)	Density Inlet (lb/ft^3)	Mass Flow (lb/min)
1	5000	14.43	0.3	7.5	32	77	136.1	4737	N/A	N/A	375
2	6000	14.43	0.3	7.5	80	77	177.8	6292	N/A	N/A	450
3	7000	14.43	0.3	7.6	80	77	212.4	7341	N/A	N/A	525
4	8000	14.43	0.3	7.6	80	77	251.7	8389	N/A	N/A	600
5	4500	14.43	0.3	7.6	80	77	138.6	4719	N/A	N/A	337.5
6	5000	14.43	0.3	7.8	80	77	154.6	5243	N/A	N/A	375
7	5500	14.43	0.3	7.8	80	77	168.1	5768	N/A	N/A	412.5
8	6000	14.43	0.3	8	80	77	186.9	6292	N/A	N/A	450
9	6500	14.43	0.3	8	105	77	215.1	7220	N/A	N/A	487.5

Blower 3

Design Point	Blower SCFM	Inlet Pressure (psia)	Inlet Filter Pressure Drop (psig)	Discharge Pressure (psig)	Inlet Temp (F)	Relative Humidity (%)	Guaranteed Wire to Air Power (KW)	Blower ICFM (volume Flow)	Isentropic Head (ft-lb/lb)	Density Inlet (lb/ft^3)	Mass Flow (lb/min)
1	5000	14.43	0.3	7.5	32	77	136.1	4737	N/A	N/A	375
2	6000	14.43	0.3	7.5	80	77	177.8	6292	N/A	N/A	450
3	7000	14.43	0.3	7.6	80	77	212.4	7341	N/A	N/A	525
4	8000	14.43	0.3	7.6	80	77	251.7	8389	N/A	N/A	600
5	4500	14.43	0.3	7.6	80	77	138.6	4719	N/A	N/A	337.5
6	5000	14.43	0.3	7.8	80	77	154.6	5243	N/A	N/A	375
7	5500	14.43	0.3	7.8	80	77	168.1	5768	N/A	N/A	412.5
8	6000	14.43	0.3	8	80	77	186.9	6292	N/A	N/A	450
9	6500	14.43	0.3	8	105	77	215.1	7220	N/A	N/A	487.5

Blowers 1&2 Combination

Design Point	Blower SCFM	Inlet Pressure (psia)	Inlet Filter Pressure Drop (psig)	Discharge Pressure (psig)	Inlet Temp (F)	Relative Humidity (%)	Guaranteed Wire to Air Power (KW)	Blower ICFM (volume Flow)	Isentropic Head (ft-lb/lb)	Density Inlet (lb/ft^3)	Mass Flow (lb/min)	Number of Blowers Operating to Meet Flow
1	5000	14.43	0.3	7.5	32	77	136.1	4737	N/A	N/A	375	1
2	6000	14.43	0.3	7.5	80	77	177.8	6292	N/A	N/A	450	1
3	7000	14.43	0.3	7.6	80	77	212.4	7341	N/A	N/A	525	1
4	8000	14.43	0.3	7.6	80	77	251.7	8389	N/A	N/A	600	1
5	9000	14.43	0.3	7.6	80	77	277.3	9438	N/A	N/A	675	2
6	10000	14.43	0.3	7.8	80	77	309.2	10486	N/A	N/A	750	2
7	11000	14.43	0.3	7.8	80	77	336.3	11536	N/A	N/A	825	2
8	12000	14.43	0.3	8	80	77	373.8	12584	N/A	N/A	900	2
9	13000	14.43	0.3	8	105	77	430.1	14440	N/A	N/A	975	2

Blowers 1&3 Combination

Design Point	Blower SCFM	Inlet Pressure (psia)	Inlet Filter Pressure Drop (psig)	Discharge Pressure (psig)	Inlet Temp (F)	Relative Humidity (%)	Guaranteed Wire to Air Power (KW)	Blower ICFM (volume Flow)	Isentropic Head (ft-lb/lb)	Density Inlet (lb/ft^3)	Mass Flow (lb/min)	Number of Blowers Operating to Meet Flow
1	5000	14.43	0.3	7.5	32	77	136.1	4737	N/A	N/A	375	1
2	6000	14.43	0.3	7.5	80	77	177.8	6292	N/A	N/A	450	1
3	7000	14.43	0.3	7.6	80	77	212.4	7341	N/A	N/A	525	1
4	8000	14.43	0.3	7.6	80	77	251.7	8389	N/A	N/A	600	1
5	9000	14.43	0.3	7.6	80	77	277.3	9438	N/A	N/A	675	2
6	10000	14.43	0.3	7.8	80	77	309.2	10486	N/A	N/A	750	2
7	11000	14.43	0.3	7.8	80	77	336.3	11536	N/A	N/A	825	2
8	12000	14.43	0.3	8	80	77	373.8	12584	N/A	N/A	900	2
9	13000	14.43	0.3	8	105	77	430.1	14440	N/A	N/A	975	2

Blowers 2&3 Combination

Design Point	Blower SCFM	Inlet Pressure (psia)	Inlet Filter Pressure Drop (psig)	Discharge Pressure (psig)	Inlet Temp (F)	Relative Humidity (%)	Guaranteed Wire to Air Power (KW)	Blower ICFM (volume Flow)	Isentropic Head (ft-lb/lb)	Density Inlet (lb/ft^3)	Mass Flow (lb/min)	Number of Blowers Operating to Meet Flow
1	5000	14.43	0.3	7.5	32	77	136.1	4737	N/A	N/A	375	1
2	6000	14.43	0.3	7.5	80	77	177.8	6292	N/A	N/A	450	1
3	7000	14.43	0.3	7.6	80	77	212.4	7341	N/A	N/A	525	1
4	8000	14.43	0.3	7.6	80	77	251.7	8389	N/A	N/A	600	1
5	9000	14.43	0.3	7.6	80	77	277.3	9438	N/A	N/A	675	2
6	10000	14.43	0.3	7.8	80	77	309.2	10486	N/A	N/A	750	2
7	11000	14.43	0.3	7.8	80	77	336.3	11536	N/A	N/A	825	2
8	12000	14.43	0.3	8	80	77	373.8	12584	N/A	N/A	900	2
9	13000	14.43	0.3	8	105	77	430.1	14440	N/A	N/A	975	2

SULZER HST 40 OPERATION COSTS - 2016

	Type of Spare Part	Installed Quantity	Furnished Unit Price, USD	Repair & Replacement Expectations (Narrative)
1	Cabinet Cooling Replacement Air Filters (4 per blower)	One set of 4	$410.00	Suggested replacement interval is once per year
2	Inlet Air Replacement Filters (4 per blower)	One set of 4	$340.00	Suggested replacement interval is once per year or differential pressure change.
3	UPS Batteries Four (4) per blower	One set of 4	$150.00	Replacement time frame is estimated at 5-7 years but high ambient heat could require replacement sooner. Batteries are available locally thru Batteries Plus or similar retailers.
4	Cooling Fans for VFD	Main Fan and Internal Fan and capacitor kit	$2,560.00	Replacement time frame 5-7 years on average. Replace upon failure normally indicated by high temperature alarm display for the VFD
5	Cooling Fans for Magnetic Bearing Controller	One Set of 5	$120.00	Suggested replacement interval is 5-7 years on average or when high temperature alarm display for MBC

Items 1-2 can be performed by the customer (with no training),
Item 3 can be performed by the customer (with minimal training),
Item 4-5 would be performed by a Sulzer trained technician on site.

Availability and lead time for each component:
Item 1.- Typical Lead time: 1 week through Sulzer or U.S. sourced 3rd party vendors.
Item 2.- Typical Lead time: 1 week through Sulzer or U.S. sourced 3rd party vendors.
Item 3.- Typical Lead time: 1 week through Sulzer or U.S. sourced 3rd party vendors.
Item 4.- Typical Lead time: 2-3 weeks through Sulzer or U.S. sourced 3rd party vendors.
Item 5.- Typical Lead time: 2-3 weeks through Sulzer or U.S. sourced 3rd party vendors.

Preventive Maintenance Requirements

Sulzer|ABS does not have standard preventive maintenance schedules as the high speed turbo compressors are self diagnostic. However, a common maintenance schedule is as follows:

1 Year: Replace inlet air filter elements, cabinet cooling filter elements
Man Hours: Less than 1 per blower
Special tools required: None

3-5 Years: Replace set of batteries for UPS Battery Backup System.
Man Hours: Less than 1 per blower
Special tools required: None

5-7 Years: Replace cooling fans in VFD and MBC.
Man Hours: Approx. 2 per blower
Special tools required: None

Sulzer – Service Response to Customer

a. 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.

   Examples of faults:
   - LCP displays an A (Alarm): During an alarm, the compressor will operate normally. Alarms must be investigated and fixed as soon as possible. This type of fault is a sign of an unusual operating condition. It does not cause the compressor to stop. The 'A fault' remains in the display for about 30 seconds.
   - LCP displays an F (Fault): An Fault will stop the compressor and actions will need to be followed to restart the compressor.
   - LCP displays an AR (Fault Auto Reset): If an 'AR Fault' occurs the compressor will also stop immediately. The fault is reset automatically and the unit tries to restart.
   - LCP displays an FT (Fault Trip): If the compressor is unable to restart after an AR fault, an FT occurs. The effect of the FT is basically the same as that of the F fault: the unit is stopped

   1. Faults and alarms cannot be reset before the condition that caused the fault or alarm has been corrected. Before contacting the compressor manufacturer or sales representative, reset the fault or alarm by pressing the reset button. In addition, check all details and write them down. Refer to pages 32-35 of the Installation and Operating Instructions Manual for instructions for LCP navigation. Refer to pages 41-45 for a complete listing of faults and alarms with descriptions of each and actions to correct them.
   2. Please contact Sulzer at 203-238-2700 for additional technical help or request to speak to one of our service techs.
   3. If the service tech can not resolve the issue via phone troubleshooting, the service tech will contact the main Sulzer office to schedule a site visit for service. The main Sulzer office will then contact the district to confirm site visit timing.

b. 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.

   96 hours

c. 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 to be onsite.

   1.- Cabinet cooling replacement air filters
   2.- Inlet air replacement filters
   3.- UPS batteries

TECHNICAL INFORMATION

Sulzer ABS TURBOCOMPRESSOR HST

Las Virgenes Municipal Water District/Triunfo Sanitation District Joint Power Authority
Tapia Water Reclamation Facility Process Air Upgrades
Section – Tapia WRF Process Air Blowers
Calabasas, CA

Sulzer Pumps
Wastewater Solutions
ABS USA
140 Pond View Drive
Meriden, CT 06450

1 DESIGN DATA

1.1 Application

Municipal Waste Water Treatment Plant

1.2 Site Conditions

- Gas to be handled[1] - air
- Altitude - 494 ft
- Ambient pressure - 14.44 psia
- Inlet pressure losses - 0.3 psi
- Blower inlet pressure - 14.44 psia
- Ambient temp. range - 32°F to 105°F
- Process air inlet temp. range - 32°F to 105°F
- Relative humidity range - 77% Non Condensing

1.3 Operating Conditions and Assumptions

- Differential pressure - 7.5 – 8.0 psi
- Total Air flow required[2]
  Maximum – 13,000 SCFM (6,500 per blower)

1.4 Power Supply

- 480 V / 3 Ph / 60 Hz

Note:
1 - See Technical Specification Sheet for air quality.
2 - Air @ 68°F, RH 36%, 14.7 psia

Sulzer Pumps
Wastewater Solutions
ABS USA
140 Pond View Drive
Meriden, CT 06450

2 Technical Solution

2.1 Selection

Sulzer ABS offers a complete compressor system consisting of Four (4) Model HST 40-U400-1-L-48 Sulzer|ABS Turbocompressors rated 400 Input HP each in a Three (3) operating and (1) standby configuration plus accessories and a Master Control Unit (MCU).

See the graph in the appendix for compressor performance data.

2.2 Overview

The Sulzer ABS Turbocompressor HST is a completely factory tested unit delivered ready to install blower that provides air to your process in a highly efficient manner. It is a single stage radial centrifugal compressor that delivers completely ***oil free air*** to the process and offers both individual and system ***power optimization*** under all duty conditions including inlet air temperature and differential pressure changes.

The turbocompressor has a simple design comprising a radial centrifugal impeller driven by a high-speed electric motor through a frequency inverter. **The *rotor is supported on oil free magnetic bearing system* levitates the shaft providing** non-contact, non-wear, frictionless performance. The inverter and magnetic bearing controller are housed in an ***integrated control cabinet*** that features a main power disconnect, local control keypad with stop, start, local, remote push buttons and display panel. An automatic blow off valve is also included in the assembly. A ***high efficiency acoustic enclosure*** surrounds the compressor/motor assembly area minimizing blower room noise. All of the above items **are *mounted on a common small footprint base plate*** (often 33% smaller than other blowers) that can be easily moved with a forklift.

These turbocompressors offer modern, ***state of the art technology, high efficiency*** encompassing features designed to providing both the installer and user with the maximum benefits available. They are a departure from the conventional type of compressor, many of which rely on basic designs and principles that have not changed for many years. The machines are manufactured in full compliance with all relevant EU Norms and Directives for Machinery, Low Voltage, and Electromagnetic Compatibility as well as all relevant UK Health & Safety legislation.

2.3 Features & Benefits

- The HST will ***operate in the best efficiency area down to 55% of the maximum flow***.
- Each HST is a totally integral, single stage, turbocompressor that needs ***no additional requirement for external inverter drives, soft starters, instrumentation or control panels.*** The additional cost of these items should be considered when comparing the capital cost of the HST with other compressors.
- Each HST has an internal frequency inverter, which allows the compressor to ***automatically match compressor performance exactly to the process demand***. The compressor even compensates for variations in ambient pressure and temperature conditions thereby constantly optimising energy consumption under all conditions.
- Each HST has a Cutler-Hammer (Vacon) NX series VFD with an interface keypad that controls and monitors the turbocompressors performance.
- Each HST is complete with its own ***high efficient acoustic enclosure*** that keeps the noise level below the value shown in the appendix without inlet or outlet silencers 3 feet from the compressor at the worst case conditions described below.
    - The compressor is running at maximum pressure

- The compressor is running at maximum speed

In service the noise level will be reduced if the compressor is running at a more efficient point however the configuration of the compressor building and discharge pipe work arrangement etc. will also contribute to the overall site noise levels experienced. It is for this reason that we cannot at this stage make firm noise level guarantees under site conditions.

It is possible to lower noise levels even further by wrapping and supporting all piping. Another way to reduce noise even more is by installing a special forced compressor ventilation however this last option is complicated and very expensive and should only be considered in the absence of any other alternative.

- The HST is designed to minimise the footprint required for installation. In some cases the HST is ***one-third the size of comparable compressors or blowers*** thus allowing them to be housed in a much smaller building lowering construction costs.
- The HST provides a ***vibration and pulse free operation*** due to its revolutionary magnetic bearing design eliminates the need for extremely thick foundations or plinths ***reducing construction costs***. The machines are installed quickly and easily onto a 6 inch thick concrete floor. ***Pulsation free air*** also assists the aeration process by allowing the production of a constant supply of fine bubbles instead of a mix of fine and coarser bubbles increasing the oxygen transfer in the process.
- The HST is ***light and is easy to move***. It can be transported on a conventional pallet truck or forklift. There is no need for overhead lifting cranes or gantries.
- The Sulzer ABS Turbocompressor HST requires ***virtually no maintenance which reduces maintenance costs by as much as 85 to 90%***. It has only ***one moving part***, the rotor. The active magnetic bearing system ensures that there is ***no mechanical contact at any time with any parts eliminating wearing parts that will need to be replaced***. The internal frequency converter replaces gearboxes, which historically are a source of high maintenance costs. The frequency inverter also provides control of the output hence there are no complex guide vane mechanisms, which require periodic compressor shutdown for routine cleaning to keep other single stage compressors operating at peak efficiency. The elimination of oil and other fluids in the compressor system makes the Sulzer ABS Turbocompressor HST a clean and simple compressor to maintain (process & cooling air filters need to be changed). The need for heating, cooling, circulating, filtering and disposal of the fluids needed for other compressor systems increases power usage and the associated routine maintenance costs are eliminated with the HST. In addition fluid disposal costs are also eliminated. The only maintenance task needed to keep the HST compressor operating at peak efficiency throughout its lifetime is to change the cooling and process air filter elements when required. On average this is once every two to three years and takes less than 20 minutes.
- Because of its non-contacting operation the HST has ***no wearing parts.*** Therefore, it is possible to ***maintain the "as manufactured" performance*** quoted throughout the life of the compressor without the expensive maintenance and rebuilds needed with other blowers. It is unlikely that our competitors can maintain this "as manufactured condition" of their compressors without continual, expensive and extensive maintenance. This will inevitably lead to a loss in performance efficiency and an increase in operating costs of our competitors' compressor.
- Each HST is a completely integrated compressor with Cutler-Hammer (Vacon) VFD speed control and keypad interface is included as standard that ***provides soft starting, power factor correction, self-diagnostic and continuous monitoring of it's operation.***

- Each HST is supplied with an ***uninterruptible power supply*** (UPS) system that provides a secondary source of power for the magnetic bearings and magnetic bearing controller. This system is a back up to the power generation mode feature that is the first line of safety if a power outage occurs to assure that the turbocompressor will spin down without damaging the high speed unit.

- Each Sulzer ABS Turbocompressor HST is supplied with a modem for remote monitoring of the MBC.

2.4 Master Control Unit (MCU) overview

This quotation is for an MCU to control and monitor 3 x HST40 Compressors, along with Aeration control of 6 basins, at the Las Virgenes WRF, Calabasas, USA.

Scope
MCU Details
• NEMA 4X stainless steel enclosure
• Allen Bradley CompactLogix PLC – L3
• Profibus DP Master Communications card
• 10” (inch) Panelview Plus 7 HMI – Touchscreen, TFT
• HST40 Blowers will be connected to the MCU over Profibus DP communications
• Allen Bradley UPS
• Redundant 24vdc power supplies

Inter PLC/SCADA (Ethernet) Communications Signals
• From the SCADA to MCU (Ethernet/IP)

Please Note: Ethernet communications must be AB Ethernet protocol, and CAT5/6 cabling. No Fibre Optic equipment included.

Process Control Details
Summary – System has 3 x HST40 Blowers-Profibus DP protocol, 2 x pressure instruments, 6 x flow instruments (4-20mA) 6 x DO probes (4-20mA) and 6 x Flow Control Valves (4-20mA input and output)

• Blowers arranged Duty / Assist / Standby
• Blower control Fixed Pressure or Most Open Valve
• Aeration Control Modes- DO, Flow or Manual

2.5 Compressor Performance

The graph shown in the appendix shows the typical compressor performance for each compressor being offered at the conditions stated in paragraph 1.3.

We should stress that any comparison with alternative offers must be made using identical parameters and include all power demands such as oil circulators, oil heaters and acoustic enclosure ventilation fans etc.

3 Exclusions and Assumptions

3.1 Assumptions

- Reasonable access to the site and working area to enable continuous installation.
- Free access to facilities
- The compressors are to be installed in a compressor room constructed by others
- The compressor room floor will be flat and level to standard civil tolerances
- The Sulzer Turbocompressor HST to be off loaded and placed directly into the compressor building by others
- Cable tray or ducts to each compressor for the communications cabling will be supplied and installed by others.

3.2 Exclusions

Each Sulzer Turbocompressor HST is offered with the following items excluded from the quoted price.

- Supply and installation of interconnecting communications cabling between each turbocompressor and the Plant Control System.
- Installation of compressor units, accessories and associated pipe work
- Supply and installation of electrical power and signal cables to each turbocompressor and the Master Control Unit.
- Provision of any further instrumentation other than that contained within each turbocompressor or the Master Control Unit or mentioned in our scope of supply.
- Pipe insulation as deemed necessary by the client to prevent contact with hot pipes.
- The accessories include the items as shown on the typical HST Integral Turbocompressor layout drawings in the appendix. The final design of the installation may necessitate the removal or addition of items as appropriate.

Clarifications / Exceptions Statement

1. Sulzer offers this quote subject to the attached Preliminary General Commercial Comments document, to the exclusion of terms and conditions, if any, that are included in the Request for Proposal. Using this Preliminary General Commercial Comments a basis, Sulzer confirms that we will work in good faith to reach mutually acceptable terms with the contracted General Contractor if Sulzer is the selected manufacturer of specified equipment.

2. Sulzer acknowledges receipt of Addenda #'s 1 and 2 with this RFP.

3. Section Process Air Blowers – 1.0.1.e: Sulzer typically follows current INCO term FCA instead of FOB. However, we have included outgoing freight and insurance to the jobsite in our proposal.

4. Section Process Air Blowers – 1.0.8.b: Sulzer provides the following min and max pressures as requested:

3275 SCFM – 8362 SCFM @ 8.00 PSI, 494' ASL, 105° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
3371 SCFM – 8829 SCFM @ 8.00 PSI, 494' ASL, 80° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
3549 SCFM – 9578 SCFM @ 8.00 PSI, 494' ASL, 32° F, 77% RH, 480 V,0.3 PSI INLET LOSSES

3230 SCFM – 8451 SCFM @ 7.8 PSI, 494' ASL, 105° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
3325 SCFM – 8922 SCFM @ 7.8 PSI, 494' ASL, 80° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
3500 SCFM – 9637 SCFM @ 7.8 PSI, 494' ASL, 32° F, 77% RH, 480 V,0.3 PSI INLET LOSSES

3186 SCFM – 8542 SCFM @ 7.6 PSI, 494' ASL, 105° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
3280 SCFM – 8988 SCFM @ 7.6 PSI, 494' ASL, 80° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
3452 SCFM – 9697 SCFM @ 7.6 PSI, 494' ASL, 32° F, 77% RH, 480 V,0.3 PSI INLET LOSSES

3163 SCFM – 8588 SCFM @ 7.5 PSI, 494' ASL, 105° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
3257 SCFM – 9015 SCFM @ 7.5 PSI, 494' ASL, 80° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
3428 SCFM – 9727 SCFM @ 7.5 PSI, 494' ASL, 32° F, 77% RH, 480 V,0.3 PSI INLET LOSSES

5. Section Process Air Blowers – 1.0.8.c: Sulzer provides the following min and max Wire-to-air Power per the pressures stated above:

120.7 kW – 298.2 kW @ 8.00 PSI, 494' ASL, 105° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
117.3 kW – 300.7 kW @ 8.00 PSI, 494' ASL, 80° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
111.5 kW – 300.7 kW @ 8.00 PSI, 494' ASL, 32° F, 77% RH, 480 V,0.3 PSI INLET LOSSES

116.7 kW – 298.2 kW @ 7.8 PSI, 494' ASL, 105° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
113.5 kW – 300.7 kW @ 7.8 PSI, 494' ASL, 80° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
107.9 kW – 300.7 kW @ 7.8 PSI, 494' ASL, 32° F, 77% RH, 480 V,0.3 PSI INLET LOSSES

112.8 kW – 298.2 kW @ 7.6 PSI, 494' ASL, 105° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
109.7 kW – 300.7 kW @ 7.6 PSI, 494' ASL, 80° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
104.3 kW – 300.7 kW @ 7.6 PSI, 494' ASL, 32° F, 77% RH, 480 V,0.3 PSI INLET LOSSES

110.9 kW – 298.2 kW @ 7.5 PSI, 494' ASL, 105° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
107.9 kW – 300.7 kW @ 7.5 PSI, 494' ASL, 80° F, 77% RH, 480 V,0.3 PSI INLET LOSSES
102.5 kW – 300.7 kW @ 7.5 PSI, 494' ASL, 32° F, 77% RH, 480 V,0.3 PSI INLET LOSSES

6. Section Process Air Blowers – 1.0.11.d: Liquidated damages are subject to final negotiated terms and conditions with the construction contractor.

7. Section Process Air Blowers – 4.2.G.18: Sulzer assumes a power distribution panel is not required between the step down transformer and the blower enclosure.

8. Section Process Air Blowers – 4.3 Certified factory testing: Sulzer typically does not test blower with valves, filters, or any other equipment external to the blower.

9. Section Process Air Blowers – Other requirements: Sulzer typically does not provide hardware external to blower.

10. Note: Sulzer has included a pressure differential switch with the process inlet filter assembly which will need to be wired to the HST Blower enclosure terminals. Additional information will be provided in the submittal.

11. Note: Power grounding wire needs to be sized per Sulzer's Installation and Maintenance Instructions. Power Wiring to be sized per NEC and local codes.

SULZER ABS TURBOCOMPRESSOR HST

APPENDIX

Sulzer Pumps
Wastewater Solutions
ABS USA
140 Pond View Drive
Meriden, CT 06450

Preliminary General Commercial Comments to Las Virgenes Municipal District/ Triunfo Sanitation District, Joint Power Authority.

Subject to Sulzer conducting a full review of the contract terms and conditions to be received with Purchase Order, the following are Sulzer's minimum requirements. Note that these are minimum requirements and, should our tender be of interest to you, upon request we will complete a full review of your terms and conditions and send you additional comments and exceptions with the objective of reaching mutually acceptable terms.

Delivery Delivery dates are approximate, subject to normal variation customary in the industry and unforeseen delays. In no event shall Sulzer be liable for any damages to Purchaser or others arising out of any delay in performance or lateness of shipment.

Warranty The **"HST Standard Two (2) Year" Warranty** attached and incorporated by reference, shall apply.

SULZER MAKES NO OTHER WARRANTY, GUARANTEE OR REPRESENTATION IN RESPECT OF THE WORK OR ANY SERVICES PERFORMED OTHER THAN AS SPECIFIED IN THIS WARRANTY. ALL OTHER WARRANTIES, CONDITIONS, AND REPRESENTATIONS, EXPRESSED OR IMPLIED BY STATUTE, COMMON LAW OR OTHERWISE, IN RELATION TO THE SUPPLY OF THE WORK, (INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) ARE EXCLUDED TO THE EXTENT PERMITTED BY LAW.

Indemnity Subject to the limitation of liability contained herein, both Parties shall indemnify and hold harmless the other Party of damage to third party tangible property, or for bodily injury (including death), or both, arising out of the performance of the Contract to the extent that such damage or injury is attributable to the negligence or willful misconduct of the indemnifying Party. Any claim of contribution or indemnity between Sulzer and Purchaser shall be resolved on the basis of each Party's percentage of negligence, after resolution of the third party claim on which such liability is based.

LIMITATION OF LIABILITY NOTWITHSTANDING ANYTHING TO THE CONTRARY IN THE CONTRACT, INCLUDING ALL DOCUMENTS MAKING PART THEREOF, AND TO THE MAXIMUM EXTENT PERMITTED BY LAW, IN NO EVENT SHALL SULZER BE LIABLE TO THE PURCHASER, OWNER, OR END-USER, BY WAY OF INDEMNITY, OR BY REASON OF ANY BREACH OF CONTRACT OR OF STATUTORY DUTY OR BY REASON OF TORT (INCLUDING BUT NOT LIMITED TO NEGLIGENCE) FOR ANY LOSS OF PROFIT, LOSS OF CONTRACTS OR EARNINGS, DELAY DAMAGES, INTERRUPTION OR LOSS OF PRODUCTION, LOSS OF USE, LOSS OF OPPORTUNITY OR BUSINESS, INDIRECT, PUNITIVE, SPECIAL, INCIDENTAL, LIQUIDATED OR CONSEQUENTIAL DAMAGES WHATSOEVER THAT MAY BE SUFFERED BY PURCHASER. PURCHASER FURTHER AGREES TO DEFEND, INDEMNIFY, AND HOLD HARMLESS SULZER FROM ANY CLAIM MADE BY OWNER, END-USER OR PURCHASER'S CUSTOMERS FOR SUCH LOSSES. THE REMEDIES OF PURCHASER SET FORTH HEREIN ARE EXCLUSIVE, AND SULZER'S LIABILITY WITH RESPECT TO ANY CONTRACT, INDEMNITY, TORT (INCLUDING NEGLIGENCE), UNDER ANY WARRANTY, STRICT LIABILITY OR OTHERWISE SHALL NOT EXCEED ONE HUNDRED PERCENT (100%) OF THE CONTRACT PRICE OR PORTION THEREOF UPON WHICH SUCH LIABILITY IS BASED, UNLESS CLAIMS ARISE FROM GROSS NEGLIGENCE OR WILLFUL MISCONDUCT OF SULZER.

As used herein "gross negligence" shall mean reckless disregard of, or wanton indifference to, harmful and avoidable consequences and "willful misconduct" shall mean conduct that is committed with an intentional disregard for the safety of others and/or the safety of another's property. "Gross negligence" and/or "willful misconduct" shall not include any act or omission or any error of judgment or mistake made in good faith.

Termination For Cause In case of default of Sulzer, Purchaser shall be entitled to cancel the Purchase Order in whole or in part only if Sulzer's default is of material nature (which shall not include failure of Sulzer to deliver on time) and provided Sulzer has been given reasonable time – as agreed between the parties – to correct such default.

Intellectual Property Rights All designs undertaken, drawings and information (including software) supplied by the Sulzer in the course of fulfilling his obligations hereunder shall remain the exclusive property of Sulzer and may be used by the Purchaser only for the purposes of completing, maintaining, adjusting and repairing the Work. Drawings or information supplied by Sulzer shall not, without Sulzer's consent, be used, copied or communicated in whole or in part to a third party by the Purchaser for any purposes whatsoever otherwise than as agreed in writing by the Sulzer.

Payment Terms Purchaser agrees to pay tern percent (10%) on Approved Submittal(s), net 30 days from Date of Invoice, eighty percent (80%) on Delivery, net 30 days from Date of Invoice, five percent (5%) on Start Up & Training, net 30 days from Date of Invoice but not to exceed 60 days after delivery, and five percent (5%) on Delivery of Final O&M Manual(s), net 30 days from Date of Invoice. Sulzer reserves the right to invoice Purchaser in proportion to total purchase price for value of any partial receipt of goods by Purchaser under this Agreement.

Insurance Sulzer shall effect and/or maintain the following insurance:

a. General and products liability insurance covering its legal liability for bodily injury and damage to third party physical property (including Purchaser's property other than the Scope of Supply), arising out of performance of this Contract. The limit of insurance shall be one million US dollars ($5,000,000.00) per occurrence and two million US dollars ($5,000,000.00) in the aggregate.

b. Transport insurance in accordance with any agreed trade term, which shall be construed in accordance with the most current version of Incoterms.

c. For all its employees engaged in performing this Contract occupational accident and disease insurance (i.e. workers compensation or similar social insurance) in accordance with the law which may apply to those employees.

d. Automobile liability insurance in accordance with local laws or custom to the extent that Sulzer's employees use owned, non-owned or rented automobiles whilst performing Services at Purchaser's site.

Whenever required by Purchaser and procurable from the respective insurance carrier/broker, Sulzer shall furnish confirmation of any insurance which Sulzer is required to effect and/or maintain under this Contract, provided that such policies shall not be primary with respect to Purchaser's, its customer's or End User's insurance policies and shall not grant waiver of subrogation to Purchaser, its customer or End User or name such parties as additional insured or co-insured party.

Changes As promptly as practicable after receipt of a request from Purchase for a change to the Contract (Change), Sulzer will advise Purchaser in writing of amendments to the Contract, if any, which are necessitated by the requested Change. The Parties shall agree in writing on a fair and equitable adjustment to the Contract at their earliest convenience. In case the Parties do not reach such agreement within fifteen (15) Days after a Change has been requested by one of the Parties, Sulzer shall be entitled to continue with the delivery of the Scope of Supply without the requested Change. A Change is not binding until signed by both Parties.

Transfer of Title and Risk. Unless otherwise required by the applicable compulsory law, title to the Scope of Supply shall be transferred to Purchaser after Sulzer has received payment in full of the Contract Price. Risk of loss or damage to the Scope of Supply shall pass to Purchaser from the Sulzer upon delivery according to applicable Incoterms.

Dispute Resolution, Jurisdiction. Any and all disputes arising under or relating to this Contract, including any claims created by statutory law, are referred to in this paragraph as a "Dispute." Should a Dispute arise, the parties shall first seek to resolve it by informal mediation. Mediation shall be initiated by one party sending a written request for mediation, together with a description of the Dispute, to the other, and shall proceed in any manner in which the parties may agree. Any Dispute not resolved by mediation within 45 Days after written notice of the request for mediation shall be resolved in a court of competent jurisdiction.

Date: **September 5, 2017**

Quote No.: **2017-MUN-112-R0**

High Turbocompressor HST Performance

HST 40-U400-1-L-48

SULZER

Plant Location: **Calabasas, CA**

Total Design Air Flow: **13,000 SCFM**
Units: **3 Units -**

Air Flow Per Unit: **6,500 SCFM**
2 Operating + 1 Installed Spare

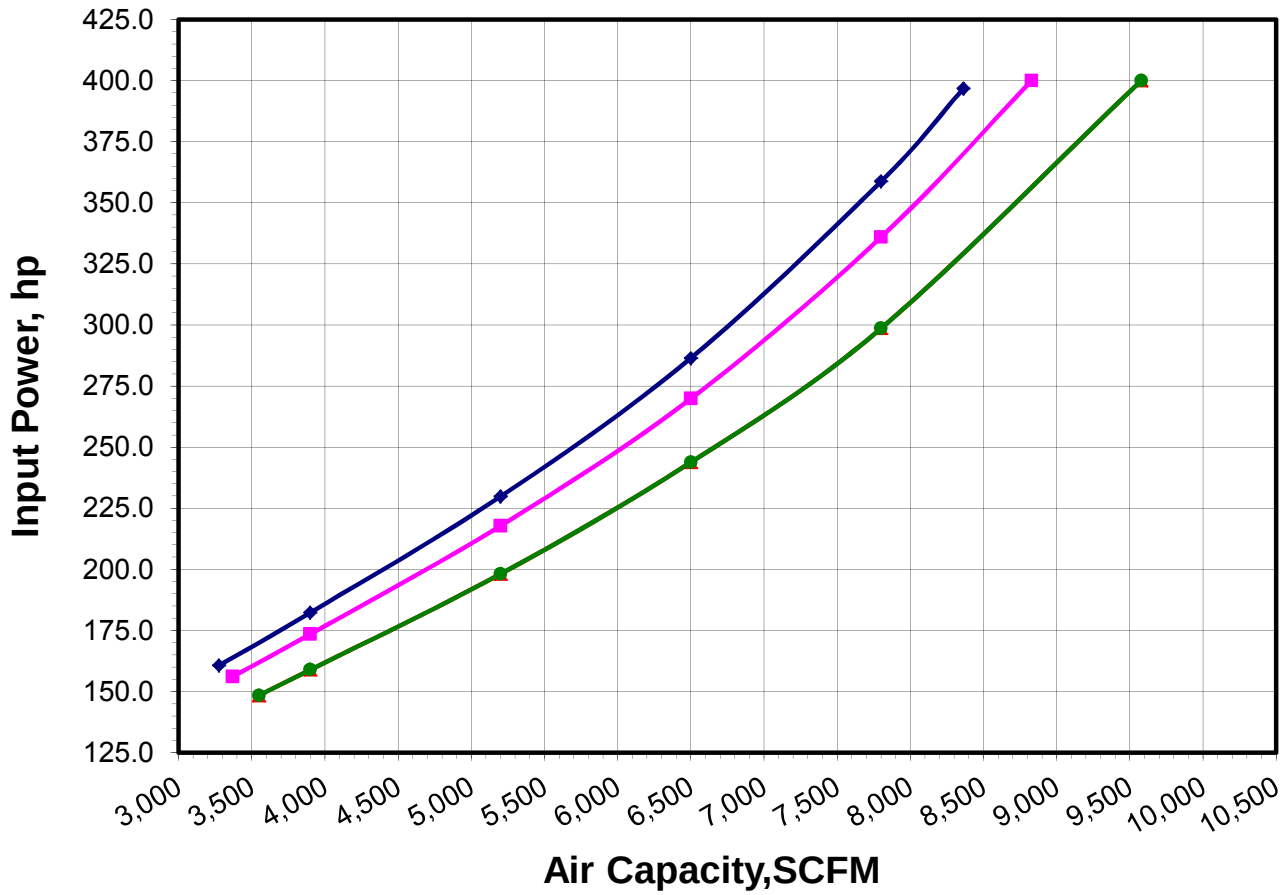
Maximum Input Power: **400 HP**
Electric Power: **480 / 3 / 60**
Maximum Motor Speed: **16,200 RPM**

Operating Pressure Ratio: **1.59**
Altitude: **494 ft**
Ambient Pressure: **14.44 psia**
Differential Pressure: **8 psig**

Operating Pressure Ratio Limit: **1.69**
Discharge Pressure: **22.44 psia**
Inlet Losses: **0.3 psig**

Clean Atmospheric Air		
Inlet Temp. °F	RH %	Legend
105	77	◆
80	77	■
32	77	▲
32	77	●

Blower Performance



(Standard Conditions: 68 Deg F, 36%RH, 14.7 PSI)

Please note that the input power is the wire to air power and includes all losses assciated with the VFD, Motor, Impeller, etc.

Date: **September 5, 2017**

Quote No.: **2017-MUN-112-R0**

High Turbocompressor HST Performance

HST 40-U400-1-L-48

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Air Flow Per Unit: **6,500 SCFM**
2 Operating + 1 Installed Spare

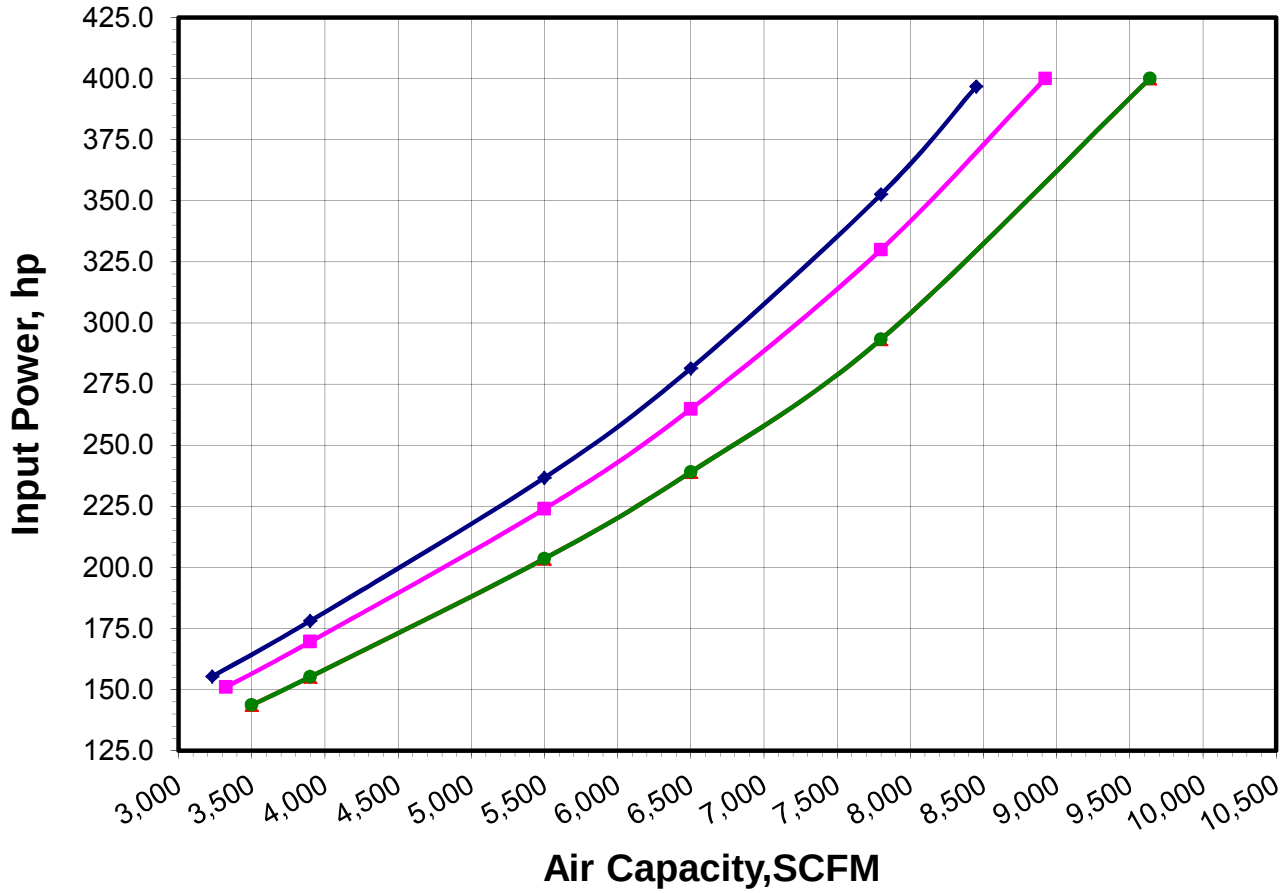
Maximum Input Power: **400 HP**
Electric Power: **480 / 3 / 60**
Maximum Motor Speed: **16,200 RPM**

Operating Pressure Ratio: **1.57**
Altitude: **494 ft**
Ambient Pressure: **14.44 psia**
Differential Pressure: **7.8 psig**

Operating Pressure Ratio Limit: **1.69**
Discharge Pressure: **22.24 psia**
Inlet Losses: **0.3 psig**

Clean Atmospheric Air		
Inlet Temp. °F	RH %	Legend
105	77	◆
80	77	■
32	77	▲
32	77	●

Blower Performance



(Standard Conditions: 68 Deg F, 36%RH, 14.7 PSI)

Please note that the input power is the wire to air power and includes all losses assciated with the VFD, Motor, Impeller, etc.

Date: **September 5, 2017**

Quote No.: **2017-MUN-112-R0**

High Turbocompressor HST Performance

HST 40-U400-1-L-48

SULZER

Plant Location: **Calabasas, CA**

Total Design Air Flow: **13,000 SCFM**
Units: **3 Units -**

Air Flow Per Unit: **6,500 SCFM**
2 Operating + 1 Installed Spare

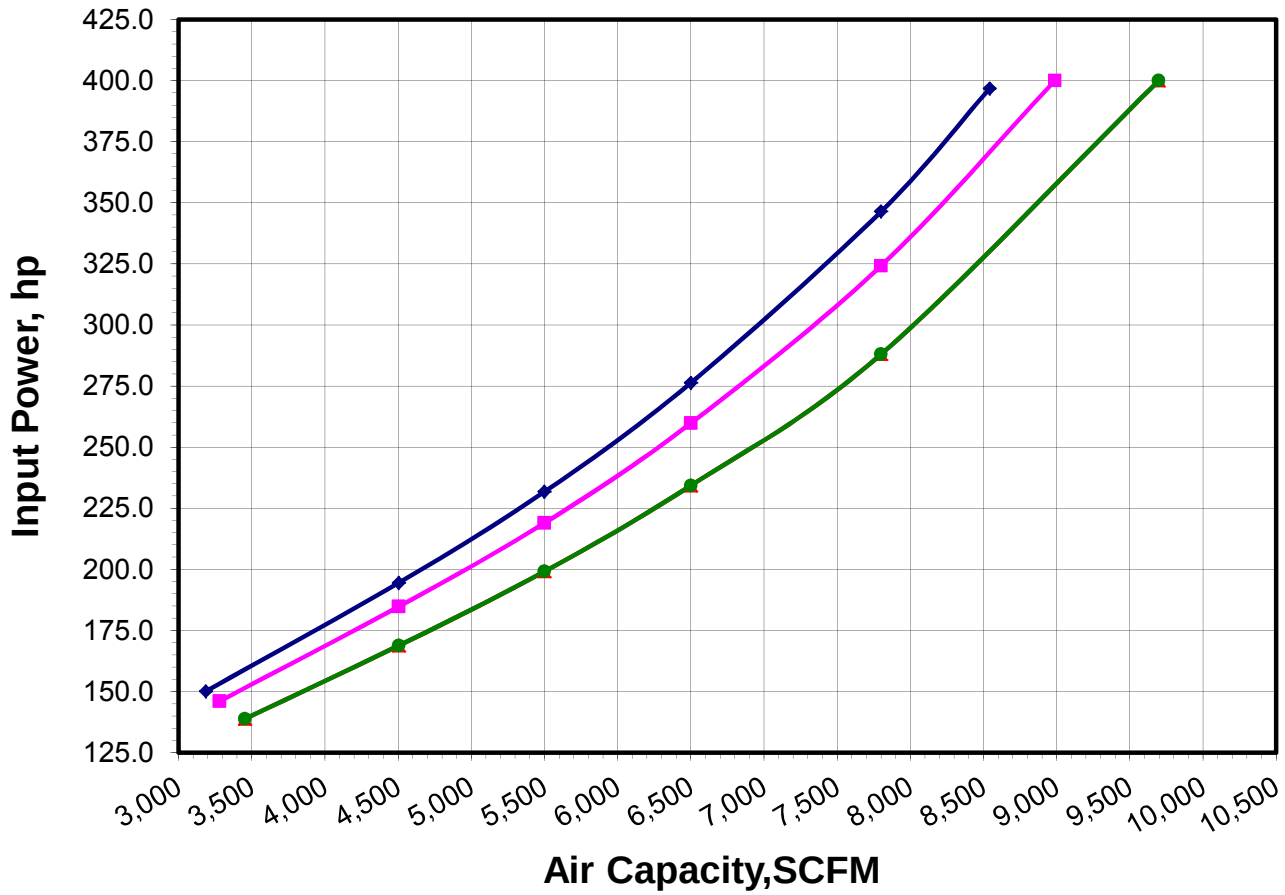
Maximum Input Power: **400 HP**
Electric Power: **480 / 3 / 60**
Maximum Motor Speed: **16,200 RPM**

Operating Pressure Ratio: **1.56**
Altitude: **494 ft**
Ambient Pressure: **14.44 psia**
Differential Pressure: **7.6 psig**

Operating Pressure Ratio Limit: **1.69**
Discharge Pressure: **22.04 psia**
Inlet Losses: **0.3 psig**

Clean Atmospheric Air		
Inlet Temp. °F	RH %	Legend
105	77	◆
80	77	■
32	77	▲
32	77	●

Blower Performance



(Standard Conditions: 68 Deg F, 36%RH, 14.7 PSI)

Please note that the input power is the wire to air power and includes all losses assciated with the VFD, Motor, Impeller, etc.

Date: **September 5, 2017**

Quote No.: **2017-MUN-112-R0**

High Turbocompressor HST Performance

HST 40-U400-1-L-48

SULZER

Plant Location: **Calabasas, CA**

Total Design Air Flow: **13,000 SCFM**
Units: **3 Units -**

Air Flow Per Unit: **6,500 SCFM**
2 Operating + 1 Installed Spare

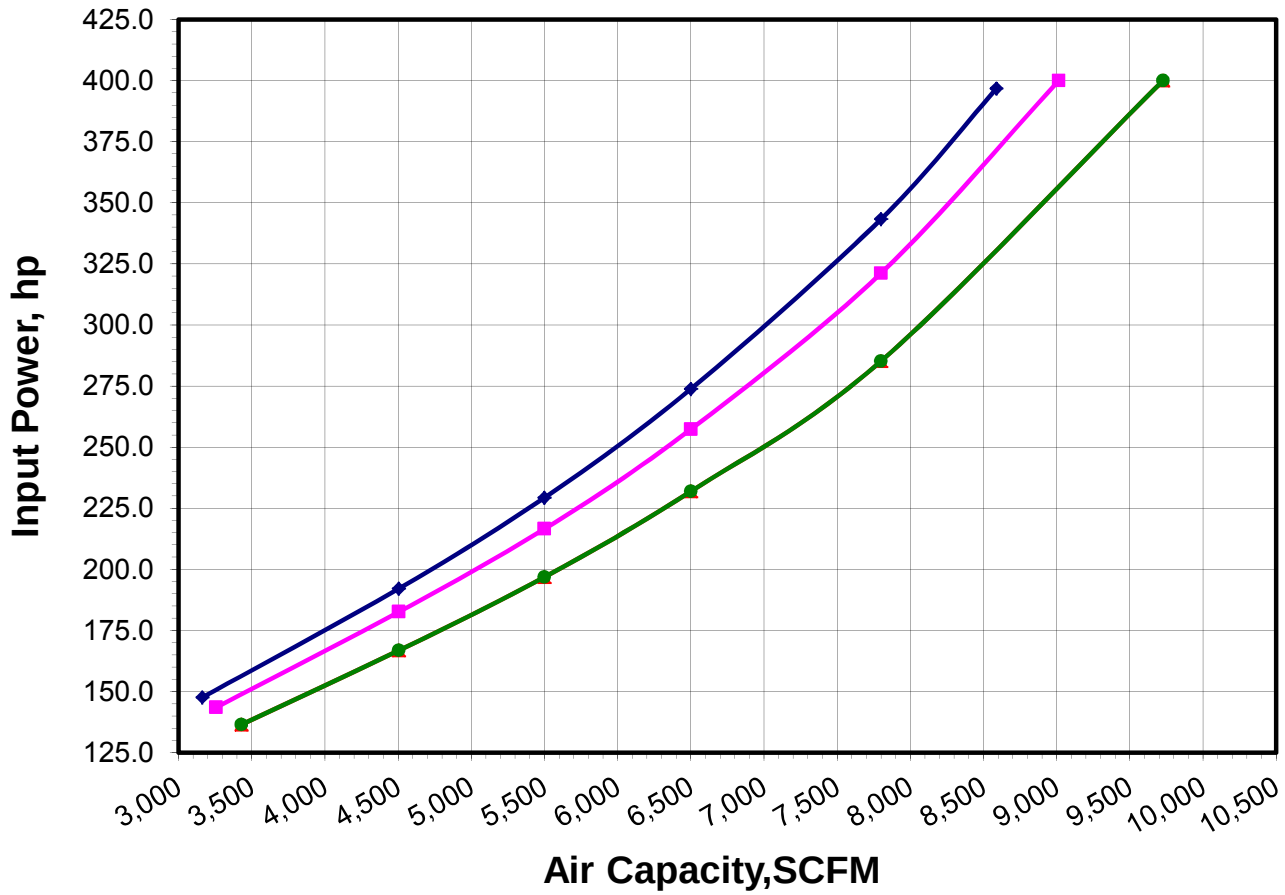
Maximum Input Power: **400 HP**
Electric Power: **480 / 3 / 60**
Maximum Motor Speed: **16,200 RPM**

Operating Pressure Ratio: **1.55**
Altitude: **494 ft**
Ambient Pressure: **14.44 psia**
Differential Pressure: **7.5 psig**

Operating Pressure Ratio Limit: **1.69**
Discharge Pressure: **21.94 psia**
Inlet Losses: **0.3 psig**

Clean Atmospheric Air		
Inlet Temp. °F	RH %	Legend
105	77	◆
80	77	■
32	77	▲
32	77	●

Blower Performance



(Standard Conditions: 68 Deg F, 36%RH, 14.7 PSI)

Please note that the input power is the wire to air power and includes all losses assciated with the VFD, Motor, Impeller, etc.

HST™ 40 Turbocompressor

A highly efficient and reliable single-stage centrifugal compressor for the provision of oil-free, low-pressure air.

Construction

High-speed electric motor
A horizontally mounted high-frequency electric motor for variable speed operation. The motor is air-cooled by an integrated shaft mounted fan and the windings are protected by Pt100-sensors monitored by the local control system.

Air end
The impeller has been designed to optimize performance and is machined from a solid piece of high-strength aluminum alloy. The volute and other main components are made from cast aluminum. A non-contact seal between air-end and motor minimizes losses to maintain high efficiency.

Variable frequency drive
Flow control is provided by a built-in variable frequency drive which also accommodates variations in outlet pressure and ambient inlet conditions. The variable frequency drive's soft-start facility eliminates peak starting currents.

Active magnetic bearings
Two radial bearings and two axial bearings support the rotor. The magnetic bearing controller uses data provided by multiple sensors to continuously manage the position of the rotor.

Blow-off valve
The blow-off valve is mounted within the acoustic enclosure with further attenuation provided by an integrated silencer.

Acoustic enclosure
The enclosure provides protection for the electrical and mechanical components and provides efficient noise attenuation for the machine. The enclosure is constructed from zinc-plated steel. It is suitable for indoor use (IP 33D / NEMA 2).

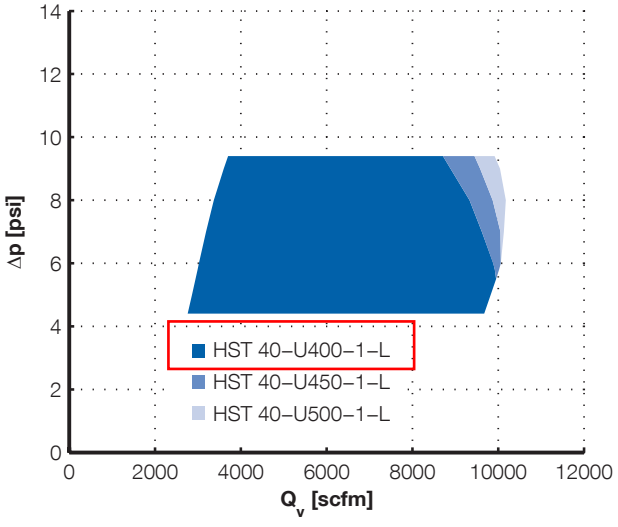
Integrated components
The filters for cooling air and the motor cooling air silencers are all integrated into the main assembly.

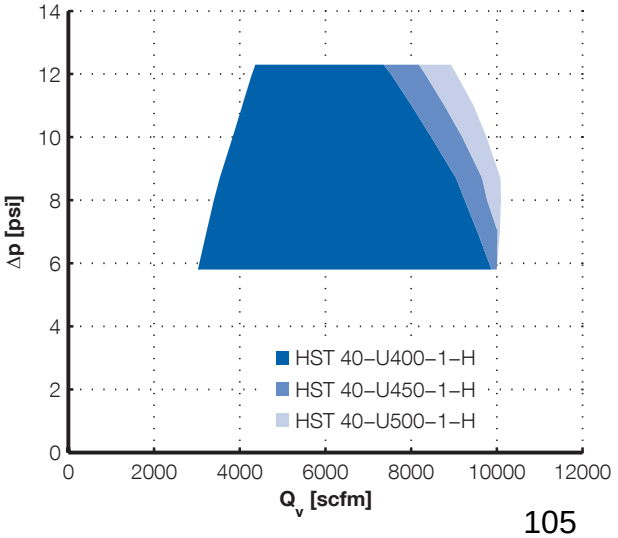
Compressor Control

Local control
The built-in local Human-Machine-Interface (HMI) provides control and monitoring for the safe and efficient operation of the machine. Flow may be controlled directly by the operator, or alternatively, the turbocompressor can follow a given reference value. The local HMI uses a keypad and text display to provide access to the operator.

Connections
Analog and digital control and monitoring connections are built in. Fieldbus connections such as Profibus, Profinet, Modbus RTU, and Modbus TCP are available as options.

Remote connections
A secure connection facilitating service and monitoring can be ordered as an option.





Options

Various options for handling special requirements regarding e.g., temperature, dusty environments and locations with high moisture can be selected.

Accessories

Required accessories for installation such as flexible joints, valves, silencers, and air filters are available from Sulzer.

Performance Testing

Compressor performance tests are performed on every machine manufactured and certificates issued to confirm compliance. The tests are carried out at the Sulzer factory test facility. Performance is guaranteed with a manufacturing tolerance of ± 2% and a measurement tolerance according to ISO 5389. Optionally tests can be performed according to ISO 5389 or ASME PTC 10. The test can be witnessed by the customer or a third party inspector.

Certification and Standards

The compressor is certified according to the relevant UL and CSA standards:

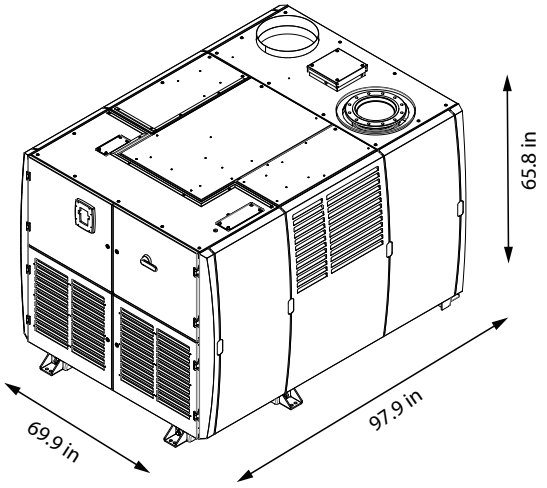
- UL 1450
- CSA C22.2 No. 68

The product is designed and manufactured in accordance with EN 61800-3 standard and intended for use in second environment locations, e.g., in industrial areas.

Installation Conditions [1]

Altitude	
Maximum altitude	8200 ft above sea level
Air quality	
Permitted chemical vapors	IEC 60721-3-3 class 3C3
Ambient conditions	
Ambient temperature range [1]	Min. 14 °F, max. +113 °F
Ambient relative humidity	< 95 %, non-condensing, non-corrosive, no dripping water
Inlet conditions	
Air temperature range for ducted process air inlet	Min. -22 °F, max. +122 °F

[1] Sulzer may approve applications outside these criteria.

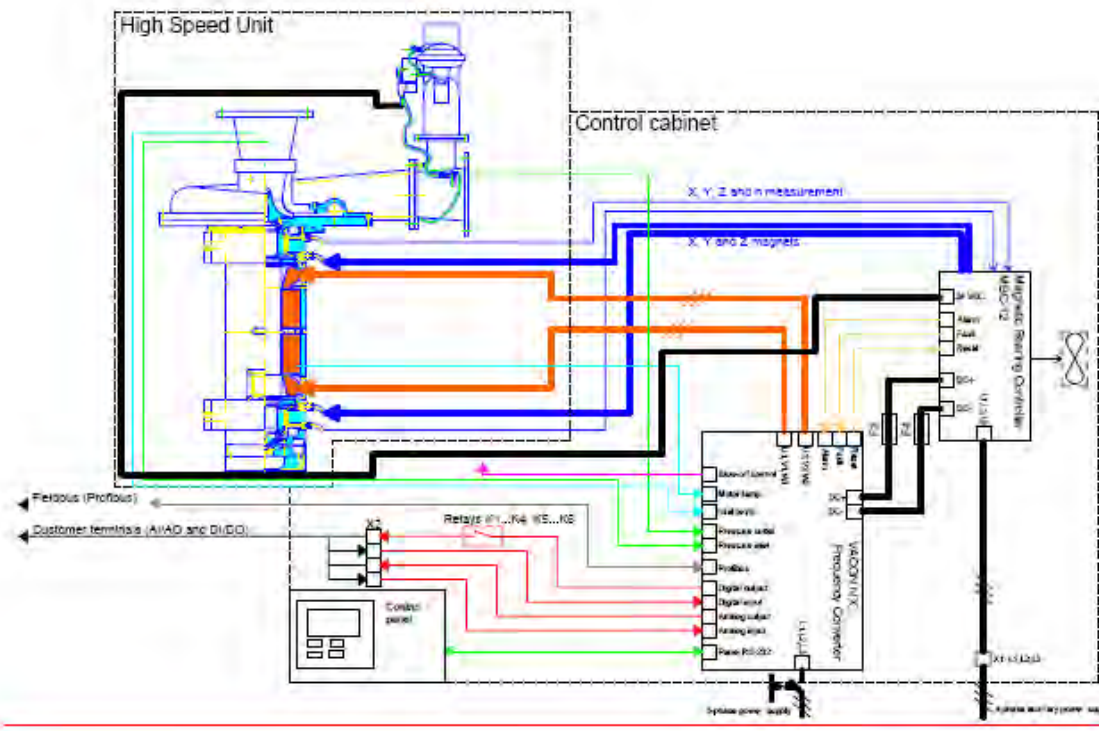


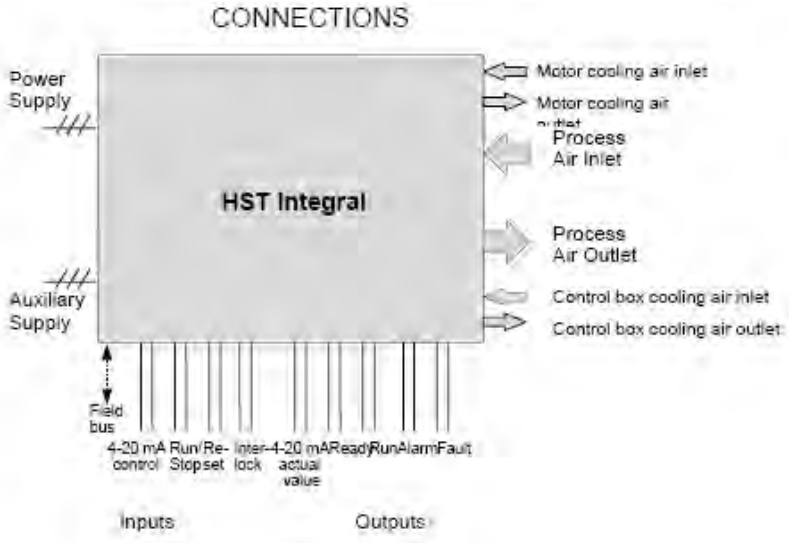
Compressor Data

HST 40-	U400-1-L	U450-1-L	U500-1-L	U400-1-H	U450-1-H	U500-1-H
Air flow range [scfm]	2800-9900	2800-10000	2800-10100	3100-9900	3100-10000	3100-10100
Pressure rise [psi]	4.4-9.4	4.4-9.4	4.4-9.4	5.8-12.3	5.8-12.3	5.8-12.3
Noise level [dB]	67	70	70	65	66	69
Input power [hp]	400	450	500	400	450	500
Power supply [V]	460-600	460-600	460-600	460-600	460-600	460-600
Input power frequency [Hz]	50/60	50/60	50/60	50/60	50/60	50/60
480 V Max. input current [A] [2]	389	437	486	389	437	486
480 V Cable size [AWG or MCM]	2x(3x250+2/0)	2x(3x300+2/0)	2x(3x350+3/0)	2x(3x250+2/0)	2x(3x300+2/0)	2x(3x350+3/0)
480 V Fuse size [A]	400	600	600	400	600	600
580 V Max. input current [A] [2]	322	362		322	362	
580 V Cable size [AWG or MCM]	2x(3x4/0+1/0)	2x(3x250+2/0)		2x(3x4/0+1/0)	2x(3x250+2/0)	
580 V Fuse size [A]	400	400		400	400	
Auxiliary current [A]	10	10	10	10	10	10
Auxiliary supply [V]	360-550	360-550	360-550	360-550	360-550	360-550
Weight [lb]	4130	4130-4200	4200	4130	4130-4200	4200

[2] The maximum input current is calculated using the nominal voltage. The cable and fuse sizes are recommendations and based on the supply current and cables rated to 70 °C [158 °F].

Turbocompressor HST
Control Schematic





Turbocompressor HST Modular Control Unit Communication Options

MCU to plant system link

- ~~Hardwired~~
- ~~Profibus~~
- ~~Modbus~~
- Ethernet

Modular Control Unit PLC options

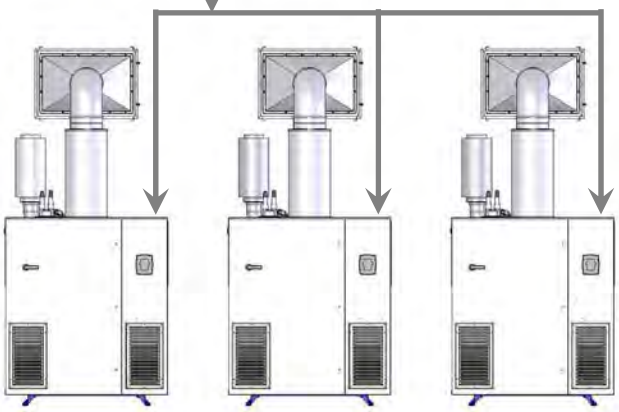
- A-B CompactLogix (standard)
- ~~Siemens S7-300 (optional)~~

4-20mA Signal from

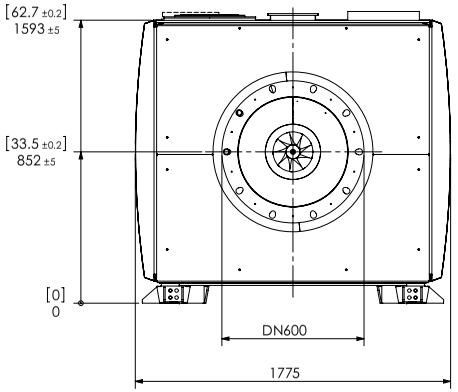
- Header Pressure sensor (preferred)
- DO probe

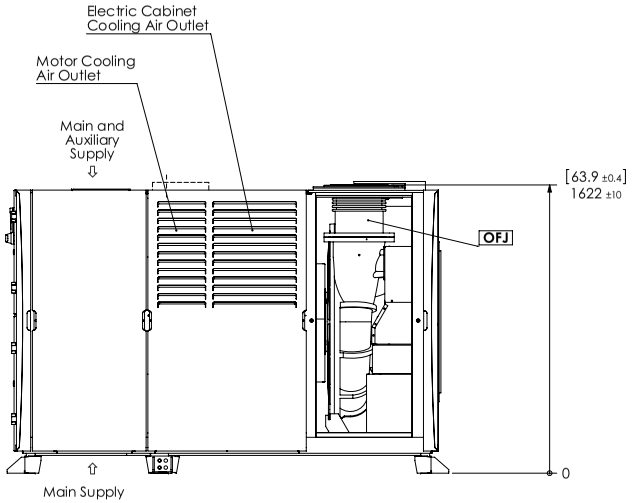
Compressor to MCU link

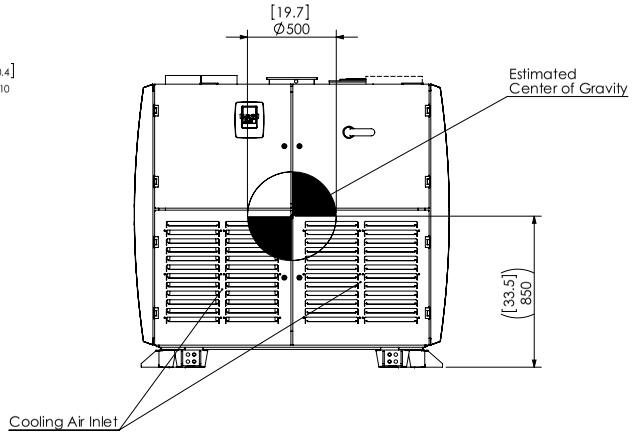
- ~~Modbus~~
- Profibus

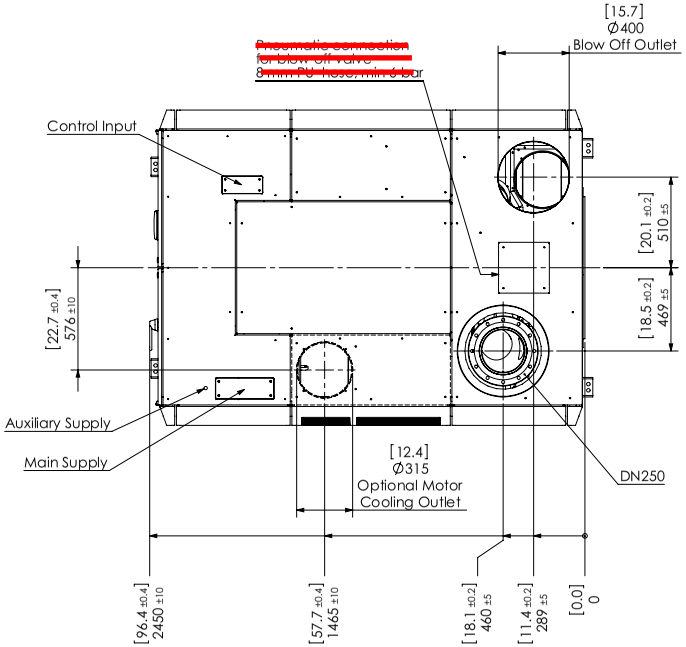


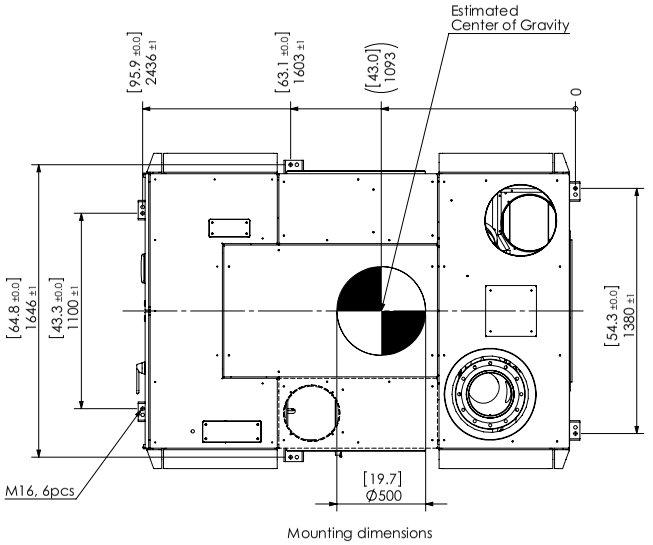
Use with three or more turbocompressors











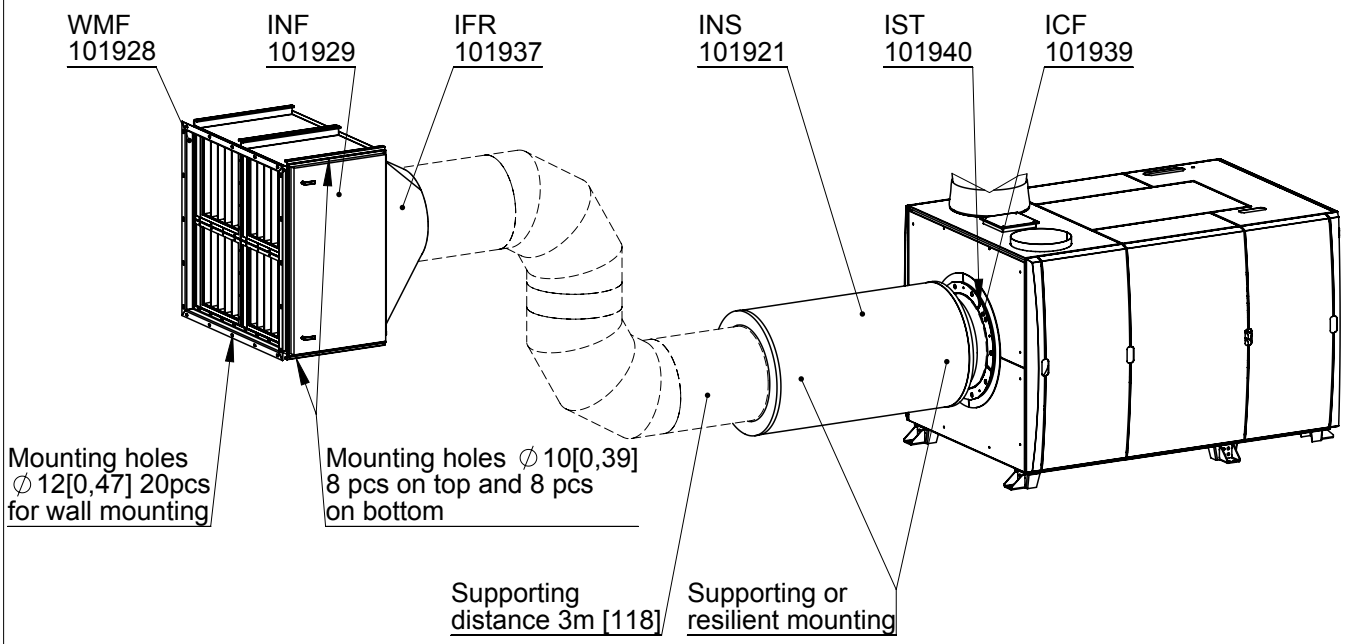
Mounting dimensions

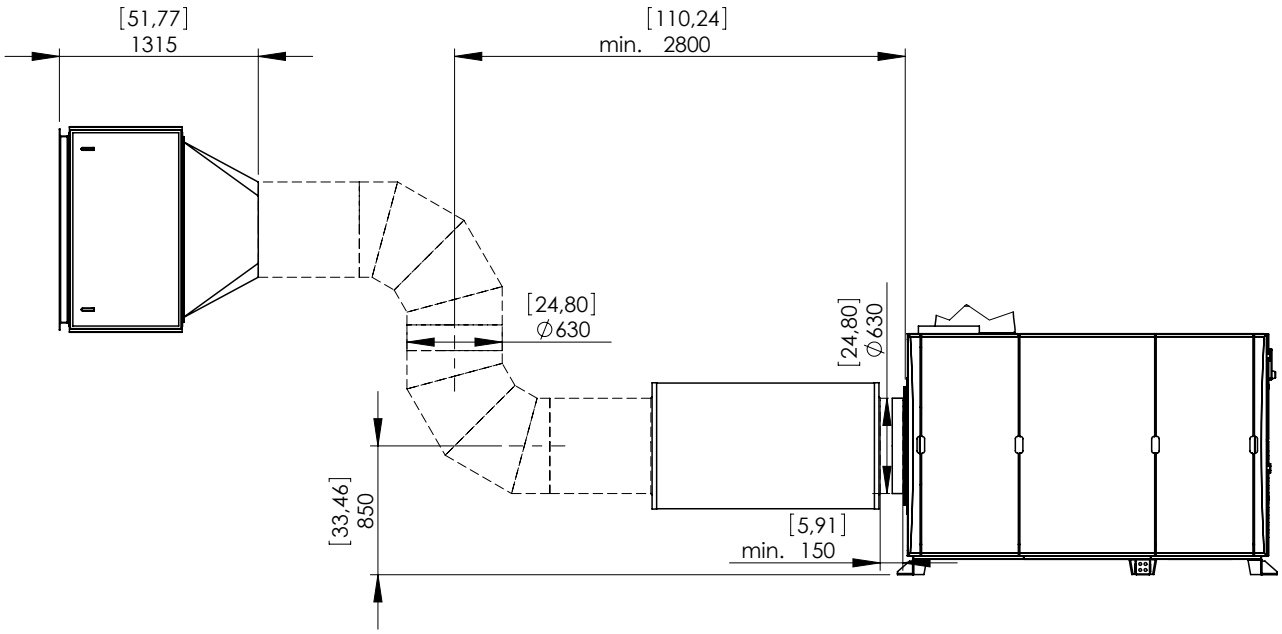
Rev.	Muutos / Change	Päiväys / Date	Nimi / Name

	Alkuperäinen suhde / Original Scale: 1:20	Massa / Mass	Piir. / Drawn: 19.11.2009 AKA; Tarkast. / Checked; Hyväks. / Approved
abs High Speed Tech Oy Ltd Ilmailuputsto 110 53600 Lappeenranta, Finland Tel. +358 5 610 9600	Nimitys / Title: HST40 päämitat; HST40 Main Dimensions		Piirustus nro / Drawing nro: 102632; Rev.; Laitt. / Sheet 1/1; Laitteita / Sheets; A2
			Konfiguraatio / Configuration: Default
			Projekti / Project: HST40

SULZER	HST 40 Accessories HST 40 Inlet A Dimension sheet	Code: 101951 Scale: 1:35 Revision: - Date: 12.6.2008 Drawn: TE

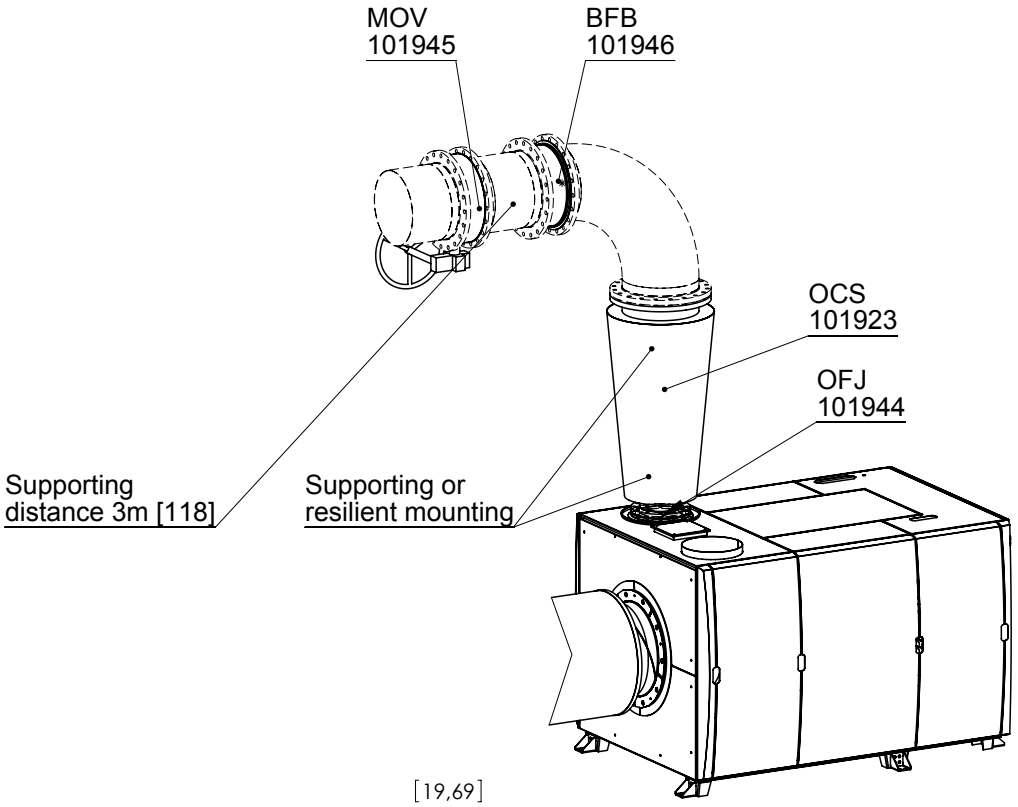
Accessories for Inlet with ∅630 ventilation pipeline

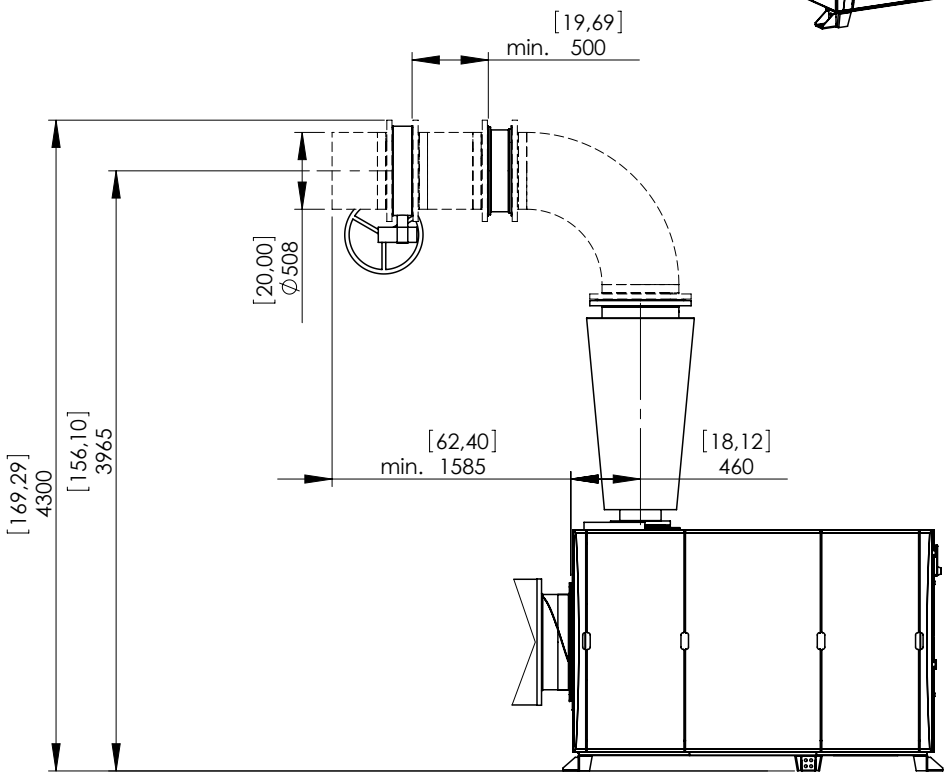




ABS turbocompressor accessories are applicable for use with ABS turbocompressors.

abs	**HST 40 Accessories** **HST 40 Outlet C** **Dimension sheet**	**Code:** 101949 **Scale:** 1:50 **Revision:** - **Date:** 12.6.2008 **Drawn:** TE





ABS turbocompressor accessories are applicable for use with ABS turbocompressors.

November 3, 2004

HIGH SPEED COMPRESSOR TEST CODES

The high speed compressors developed by High Speed Tech Oy Ltd have been tested at Laboratory of Fluid Dynamics at Lappeenranta University of Technology and at HST Lappeenranta factory, where similar test loop facilities have been built.

There are no standard test codes applicable for integrated high speed compressors. Therefore, the test following test codes have been applied

- ISO 5389:1992 Turbocompressors
- VDI 2045:1993 Acceptance and Performance Tests on Turbo Compressors and Displacement Compressors
- ASME PTC 10 – 1974 / Reaffirmed 1986 Compressors and Exhausters

Main difference is the compact integration of the compressor and motor. As they can not be separated, the measurement of only the compressor shaft power is not possible and therefore unnecessary to follow within the various test codes.

The main quantities measured and investigated in the tests are:

- overall electric power
- pressure ratio of the compressor
- the capacity of the compressor

Power

The standards put a strong emphasis on the thermal equilibrium of the turbo compressor. The long measurement tests at LUT have shown that the overall power (which power is solely used in declaring the HST performance) reaches quickly a constant level, while the power balance between the motor and the drive (compressor) takes much longer time to be correctly measured (for example ASME PTC 10 requires minimum of 30 minutes between points).

The HST measurement routine allows a longer start time for the first measurement, but the following test points are reached within minutes. The measurement software informs the personnel as an adequate measurement point is achieved and a new valve position can be chosen.

Pressure ratio

The pressures are measured in the pressure measuring stations before and after the compressor. The locations of the four static taps, the distances of flow straightening and the method of the measurements are performed as defined in both PTC 10 and ISO 5389.

The capacity of the compressor

ISO 5389 states that the flow measurements are done according to ISO 5167, which acknowledges both the long radius and ISA 1932 nozzles. By comparison, the uncertainty coefficient of the ISA 1932 is lower than the long radius nozzle. The use of ISA 1932 at the inlet of the compressor enables us to make the flow measurements in almost constant conditions and improves further the reliability of the measurements.

The ASME PTC 10 includes only the long radius nozzle, but states that under bilateral agreements, the interested parties can agree upon the type of metering device suited for the conditions and the

choice shall be stated in the test report. As the chosen device is ISA 1932 mentioned in the international standard, it is our understanding that ISA 1932 also fulfils the requirements of PTC 10.

The flow is measured in the inlet conditions and the only leakage of the machine is through a multi knife radial labyrinth seal between the base of the impeller and compressor base. Due to relative small pressure difference, this leakage is less than 1% and very difficult to measure. The ISO 5389 states that in these circumstances appropriate corrections shall be agreed between the manufacturer and purchaser. PTC 10 states that the capacity is the net rate of flow compressed and delivered. The HST margin covers this difference in measurements.

In Lappeenranta, November 3, 2004

Jaakko Larjola
Professor

Jari Backman
Professor

SULZER

Warranty

HST Standard Two (2) Year

Manufacturer warrants the above referenced Sulzer brand equipment ("HST") (excluding replacement parts and filters) to be free from defects in workmanship and materials as follows:

The warranty period shall expire twenty four (24) months from the date of shipment of Products from Manufacturer to original end customer.

Products or parts thereof that are replaced or repaired under warranty during the original warranty period, shall be covered under this warranty until the expiration of the original warranty period or ninety (90) days from the date of such replacement or repair, whichever is later. In any event, such extended warranty period shall not exceed ninety (90) days after the expiration of the original warranty period.

The warranties stated above are contingent upon start-up of the equipment on site by an authorized Sulzer Service Technician, as verified by receipt of start-up reports completed and signed by an authorized Sulzer Service Technician.

If during the warranty period, any Products fail to meet the requirements set out in this warranty, the purchaser or end user shall give written notification to Manufacturer stating the reasons therefor. Upon receipt of prior written authorization from Manufacturer, Products shall either be repaired in place or transported to Manufacturer's authorized facility, prepaid, at purchaser or end-user's cost. Manufacturer's sole obligation shall be to repair, modify or replace Products or parts thereof, at Manufacturer's sole option. Products repaired at Manufacturer's authorized facility under this warranty will be returned with freight prepaid. Products must be repaired by an authorized Sulzer Service Technician for warranty coverage to be considered.

All protection features (such as fuses, motor and VFD over temperature, over pressure, shaft position, etc.) incorporated in the Products must be connected and operable for warranty coverage.

This warranty shall not apply to any Products or parts thereof which have been (i) subjected to misuse, misapplication, accident, alteration, neglect, failure to act in a timely manner to address alarms/warnings, or physical damage; (ii) installed, operated, and/or maintained in a manner which is contrary to Manufacturer's written instructions as it pertains to installation, operation and maintenance of the Products, including but without limitation to being operated without being connected to monitoring devices supplied with specific products for protection; (iii) used in an application other than the use for which it is intended as specified in Manufacturer's product literature; (iv) damaged due to a defective power supply, improper electrical protection, faulty repair, ordinary wear and tear, corrosion, erosion or chemical attack, an act of God, an act of war or by an act of terrorism; (v) damaged resulting from the use of accessory equipment not sold by Manufacturer or not approved by Manufacturer for use in connection with Manufacturer's products; or (vi) repaired or altered without Manufacturer's written consent.

This warranty does not cover costs for standard and/or scheduled maintenance that is performed, nor does it cover Manufacturer's parts that, by virtue of their operation, require replacement through normal wear (aka: Wear Parts), unless a defect in material or workmanship is determined by Manufacturer. Wear Parts are defined as air filters, batteries, VFD & MBC cooling fans and/or any items deemed necessary to perform and meet the requirements of normal maintenance on all Manufacturer's equipment.

Manufacturer shall not be liable for any special, indirect, consequential, or punitive damages, or profit loss of any kind. Major components not manufactured by the Manufacturer are covered by the original manufacturer's warranty in lieu of this warranty. In addition to any other special, indirect or consequential damages referenced above, Manufacturer shall not be responsible for travel expenses, rented (replacement) equipment, removal fees, installation fees, outside contractors fees, or unauthorized repair shop expenses.

This warranty shall extend only to the initial end user.

ALL OTHER WARRANTIES, CONDITIONS AND REPRESENTATIONS, EXPRESSED OR IMPLIED BY STATUTE, COMMON LAW OR OTHERWISE, IN RELATION TO THE SUPPLY OF THE PRODUCTS INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED TO THE EXTENT PERMITTED BY LAW.

*This warranty is applicable to Products supplied by Sulzer Pumps Solutions Inc. or Sulzer Pumps (Canada) Inc. for installation in the U.S.A. or Canada, unless specifically indicated otherwise in writing by Manufacturer.

Preventive Maintenance Requirements

Sulzer|ABS does not have standard preventive maintenance schedules as the high speed turbo compressors are self diagnostic. However, a common maintenance schedule is as follows:

1 Year: Replace inlet air filter elements, cabinet cooling filter elements
Man Hours: Less than 1 per blower
Special tools required: None

3-5 Years: Replace set of batteries for UPS Battery Backup System.
Man Hours: Less than 1 per blower
Special tools required: None

5-7 Years: Replace cooling fans in VFD and MBC.
Man Hours: Approx. 2 per blower
Special tools required: None

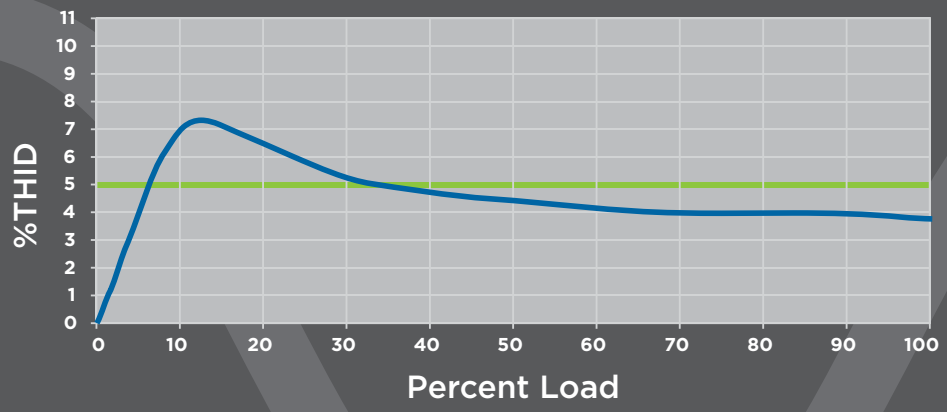
MTE
AN SL INDUSTRIES COMPANY

Matrix® AP

IMPROVE YOUR POWER QUALITY & ENERGY EFFICIENCY...WITH MTE'S PATENTED **ADAPTIVE PASSIVE TECHNOLOGY** TO ACHIEVE BETTER THID PERFORMANCE OVER A WIDER LOAD RANGE.

HELPS MEET IEEE-519 REQUIREMENTS (5% THID)
WHEN USED AT LIGHTER LOADS

Percent THID for Series AP (165A)



Guaranteed THID performance:
8% MAX at 30% load
5% MAX at full load

MTE MATRIX FILTERS HAVE EVOLVED AGAIN INTO A BETTER SOLUTION

AP FEATURES:

- No Resistors
- No Fans
- Fewer Capacitors
- Modular Components
- Standardized Wiring
- Top Lifting Provisions
- 3 Year Warranty

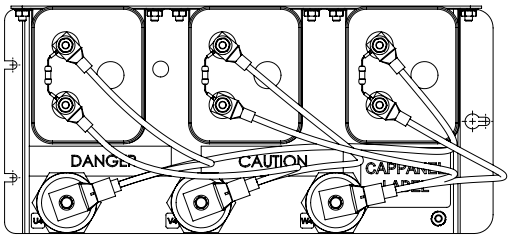
DESIGNED TO BE CONVECTION-COOLED & COMPATIBLE WITH GENERATOR SYSTEMS

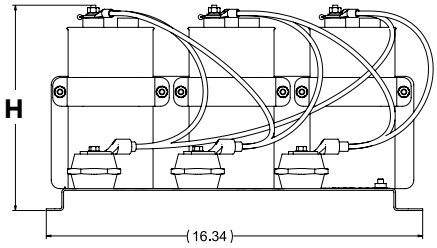
WITH MTE'S NEW, INNOVATIVE ADAPTIVE PASSIVE TECHNOLOGY, THE MATRIX® AP FILTER IS THE MOST ADVANCED HARMONIC FILTER DESIGN THAT PROVIDES IMPROVED POWER FACTOR AND ENERGY EFFICIENCY.

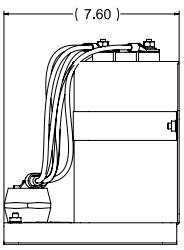
Amps rating	NEMA 1/2					NEMA 3R				
	Cat. PN.	Wt. (lbs.)	Enclosure	Fig.	Size (in.) (H X W X D)	Cat. PN.	Wt. (lbs.)	Enclosure	Fig.	Size (in.) (H X W X D)
6	MAPG0006D	64	CAB-12AP2	6	24 X 12.5 X 17.9	MAPW0006D	72	CAB-12AP3	6	24 X 12.5 X 22.9
8	MAPG0008D	65	CAB-12AP2	6	24 X 12.5 X 17.9	MAPW0008D	73	CAB-12AP3	6	24 X 12.5 X 22.9
11	MAPG0011D	74	CAB-12AP2	6	24 X 12.5 X 17.9	MAPW0011D	82	CAB-12AP3	6	24 X 12.5 X 22.9
14	MAPG0014D	79	CAB-12AP2	6	24 X 12.5 X 17.9	MAPW0014D	87	CAB-12AP3	6	24 X 12.5 X 22.9
21	MAPG0021D	97	CAB-12AP2	6	24 X 12.5 X 17.9	MAPW0021D	105	CAB-12AP3	6	24 X 12.5 X 22.9
27	MAPG0027D	101	CAB-12AP2	6	24 X 12.5 X 17.9	MAPW0027D	109	CAB-12AP3	6	24 X 12.5 X 22.9
34	MAPG0034D	112	CAB-12AP2	6	24 X 12.5 X 17.9	MAPW0034D	120	CAB-12AP3	6	24 X 12.5 X 22.9
44	MAPG0044D	125	CAB-12AP2	6	24 X 12.5 X 17.9	MAPW0044D	133	CAB-12AP3	6	24 X 12.5 X 22.9
52	MAPG0052D	172	CAB-17AP2	5	34 X 17.8 X 21	MAPW0052D	179	CAB-17AP3	5	34 X 17.8 X 26
66	MAPG0066D	185	CAB-17AP2	5	34 X 17.8 X 21	MAPW0066D	192	CAB-17AP3	5	34 X 17.8 X 26
83	MAPG0083D	209	CAB-17AP2	5	34 X 17.8 X 21	MAPW0083D	217	CAB-17AP3	5	34 X 17.8 X 26
103	MAPG0103D	313	CAB-17AP2	5	34 X 17.8 X 21	MAPW0103D	321	CAB-17AP3	5	34 X 17.8 X 26
128	MAPG0128D	333	CAB-26AP2	5	51.3 X 27.7 X 24.9	MAPW0128D	347	CAB-26AP3	5	51.3 X 27.7 X 30
165	MAPG0165D	392	CAB-26AP2	5	51.3 X 27.7 X 24.9	MAPW0165D	406	CAB-26AP3	5	51.3 X 27.7 X 30
208	MAPG0208D	405	CAB-26AP2	5	51.3 X 27.7 X 24.9	MAPW0208D	419	CAB-26AP3	5	51.3 X 27.7 X 30
240	MAPG0240D	489	CAB-26AP2	5	51.3 X 27.7 X 24.9	MAPW0240D	503	CAB-26AP3	5	51.3 X 27.7 X 30
320	MAPG0320D	630	CAB-26APD2	5	76 X 27.7 X 22	MAPW0320D	656	CAB-26APD3	5	76 X 27.7 X 34
403	MAPG0403D	673	CAB-26APD2	5	76 X 27.7 X 22	MAPW0403D	700	CAB-26APD3	5	76 X 27.7 X 34
482	MAPG0482D	702	CAB-42AP2	5	87.6 X 43.7 X 31	MAPW0482D	710	CAB-42AP3	5	87.6 X 43.7 X 40.1
636	MAPG0636D	1077	CAB-42AP2	5	87.6 X 43.7 X 31	MAPW0636D	1084	CAB-42AP3	5	87.6 X 43.7 X 40.1
786	MAPG0786D	1252	CAB-42AP2	5	87.6 X 43.7 X 31	MAPW0786D	1260	CAB-42AP3	5	87.6 X 43.7 X 40.1
850	MAPG0850D	1386	CAB-48AP2	5	84 X 49.2 X 36.5	MAPW0850D	1393	CAB-48AP3	5	84 X 49.2 X 45.5
1000	MAPG1000D	1640	CAB-48AP2	5	84 X 49.2 X 36.5	MAPW1000D	1647	CAB-48AP3	5	84 X 49.2 X 45.5
1200	MAPG1200D	1700	CAB-48AP2	5	84 X 49.2 X 36.5	MAPW1200D	1707	CAB-48AP3	5	84 X 49.2 X 45.5

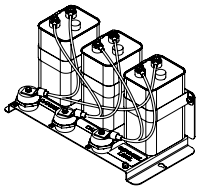
CAPACITOR PANEL

FIGURE 1A









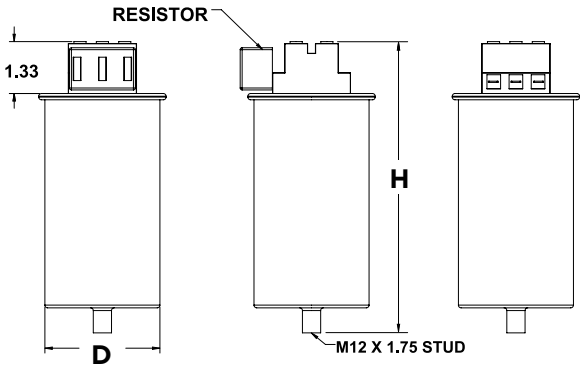
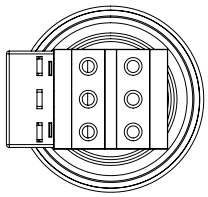
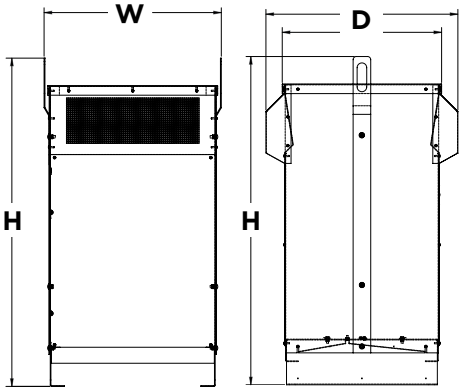


FIGURE 1B



ENCLOSURES



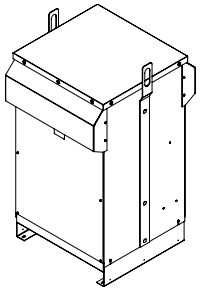
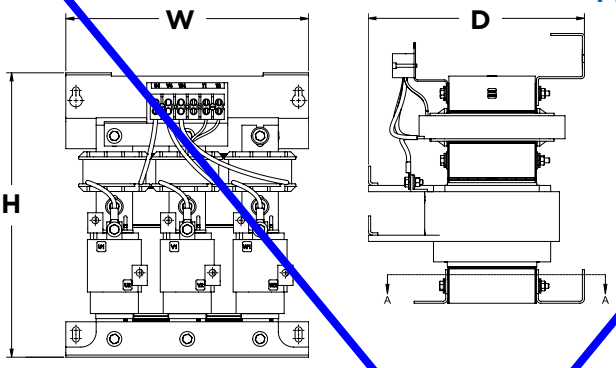


FIGURE 5

→ *NOTE: HOODS ONLY ON NEMA 3R ENCLOSURES*

OPEN MAGNETICS

FIGURE 2



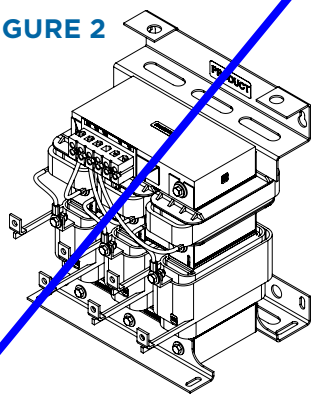
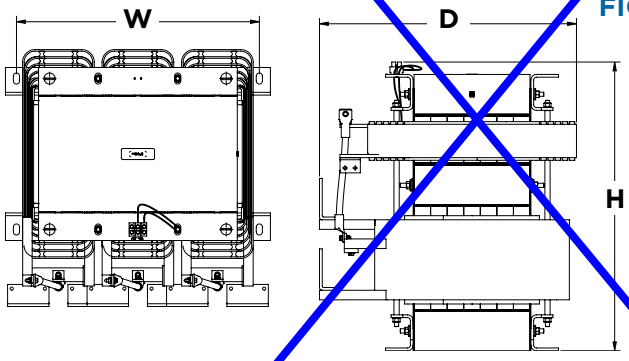
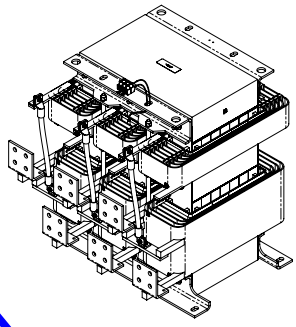


FIGURE 3





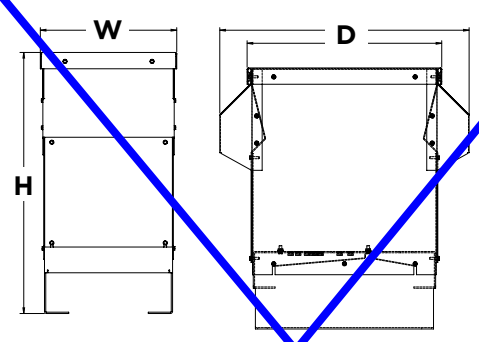
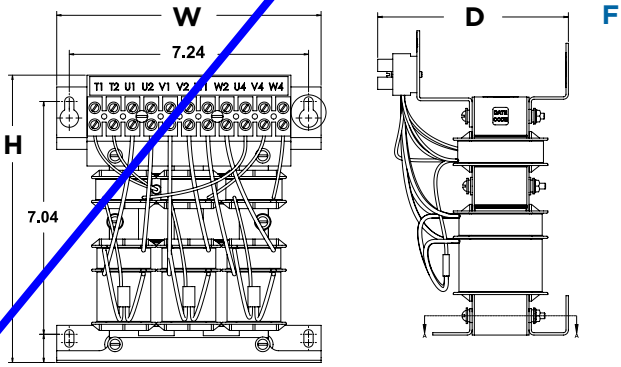


FIGURE 4



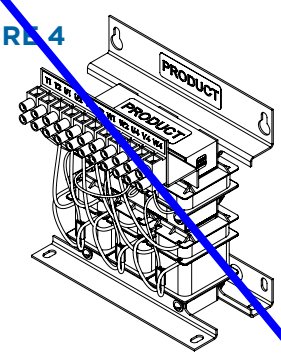
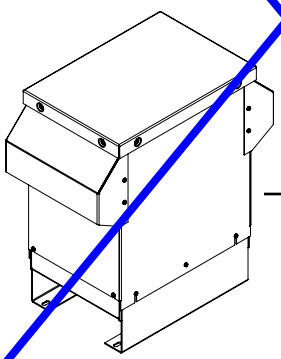


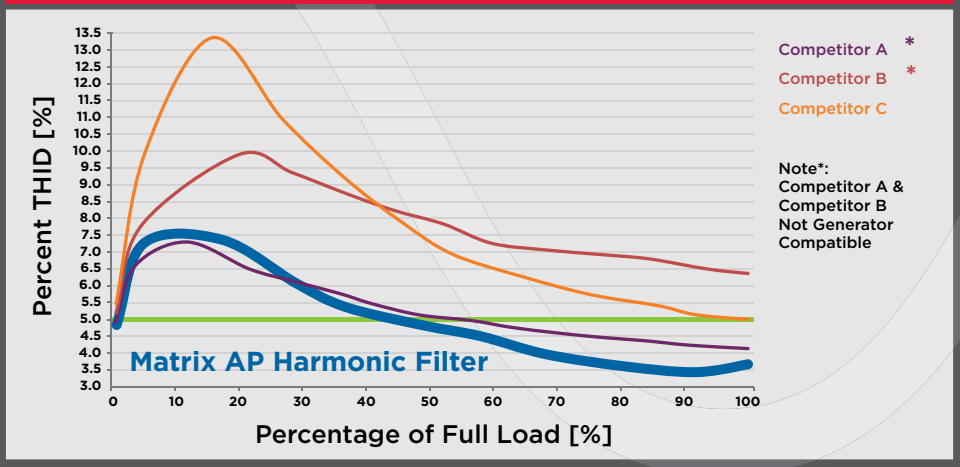
FIGURE 6



→ *NOTE: HOODS ONLY ON NEMA 3R ENCLOSURES*

ADAPTIVE PASSIVE PERFORMANCE

The Matrix AP achieves superior harmonic mitigation compared to other harmonic filter designs.



Our "Adaptive" patented technology allows the Matrix AP to adapt to various loads while still providing optimized THID performance. The superior design integrates the magnetic core and the shunt core into the same lamination stack. Not only is this unit more efficient with six pulse drives than a standalone 18 pulse rectifier, it's more economical and performs better during phase imbalance.

THE MATRIX AP ADVANTAGE

- Reduces energy costs by improving system efficiency and reliability.
- Extends service life of electrical equipment, especially transformers and motors, due to the virtual elimination of CEMF and the skin effect. Uses hi-current capacitors with threaded connections for a more reliable, robust connection.
- Lowers capacitance resulting in reduced leading power factor under light loads.
- Reduces the possibility of resonance between the drive and filter with improved C/L ratio—eliminating the need to add another reactor and the requirement to change certain parameters in the drive.

SPECIFICATIONS

Load	6 pulse rectifier
Input Voltage	Nominal voltage VAC +/- 10%, 3 Phase
Frequency	Nominal Frequency + .75 Hz
Input Voltage Line Imbalance	1% maximum, to meet performance guarantee
Service Factor	1.00
Capacitive Reactive Power (KVAR)	128A and Above: 15% MAX Below 128A: 20% MAX
Ambient Temperature (Operating)	
Enclosed Filters: 480V	320A and Above: -40 to +45 degrees C Below 320A: -40 to +40 degrees C
~~Open Panel Filters: 480V, 600V~~	~~-40 to +50 degrees C~~
Storage Temperature	-40 to +90 degrees C
Altitude	0 to 3300 Feet above sea level without derating
Relative Humidity	0 to 95% non-condensing
Agency Approvals: UL and cUL Listed	UL508 and CSA-C22.2 No 14-95 File E180243 (3HP to 1000HP, 120VAC to 600VAC, 50Hz, 50/60Hz, & 60Hz Three Phase)
Guaranteed Performance: Total Harmonic Current Distortion	8% MAX at 30% LOAD 5% MAX at FULL LOAD
Enclosure Color	NEMA 1/2 - ANSI 61 Gray ~~NEMA 3R - RAL 9003 White~~

APPLICATIONS

- AC variable frequency drives
- DC adjustable speed drives
- Battery chargers
- Elevator drives
- Fans and pumps
- HVAC systems
- Induction heating equipment
- Welding operations
- Any 6 pulse diode power supply
- Uninterrupted Power Systems (UPS)

INDUSTRIES

- Oil and Gas
- Utilities
- Water and Wastewater Treatment
- Printing, Pulp & Paper
- Steel/Chemical/Automotive
- Mining
- Facility/Elevator/HVAC

PERFORMANCE GUARANTEE

Select & install the appropriate Matrix Harmonic Filter in a variable torque AC variable frequency drive application, within our published system limits & we guarantee that the input current distortion will be less than or equal to 5% THID for MAP Series filters at full load, and less than 8% at 30% load. If a properly sized & installed filter fails to meet its specified THID level, MTE will provide the necessary modifications or replacement filter at no charge. TDD will typically be even lower than THID.

Matrix filters can also provide similar performance in other drive applications such as constant torque, DC drives & other phase controlled rectifiers, but actual THID levels can vary by load and/or speed & therefore cannot be guaranteed. Consult factory for assistance when applying Matrix filters on these types of equipment.

MINIMUM SYSTEM REQUIREMENTS:
The guaranteed performance levels of this filter will be achieved when the following system conditions are met:

Frequency:	60Hz ± 0.75Hz
System Voltage:	Nominal System Voltage (line to line) ±10%
Balanced Line Voltage:	Within 1%
Background Voltage Distortion:	0% THVD.

NOTE: The presence of background voltage distortion will cause motors & other linear loads to draw harmonic currents. Additional harmonic currents may flow into the Matrix filter if there is harmonic voltage distortion already on the system.

MATRIX AP BENEFITS

- Industy Leading Harmonic Reduction
- Reduced Energy Costs
- Generator Compatible
- Easy To Install & Maintain
- Flexible Mounting Provisions With Intergral Lifting Provisions
- Improved Power Factor

Shown: Matrix AP 6A Filter w/ 3 Phase Capacitor
Providing a more robust soloution with fewer connections

Our representative in your area is

MTE
AN SL INDUSTRIES COMPANY
N83 W13330 Leon Road,
Menomonee Falls, WI 53051
P: 800.455.4MTE (4683) F: 262.253.8222

OTT North America, LLC
225 Peachtree St. NE, Suite 1100 South
Atlanta, GA 30303 USA
flood@ott-group.com
Phone: 920-213-6334

October 17, 2018

Eric Schlageter, Associate Engineer
Las Virgenes Municipal Water District (LVMWD)
4232 Las Virgenes Road
Calabasas, CA 91302

Duong Do, VP – Environmental Water Division
Pacific Advanced Civil Engineering, Inc.
17520 Newhope St. – Ste. 200
Fountain Valley, CA 92708

Subject: OTT North America Quotation 16-0994-R2
Tapia WUD

Dear Eric, Duong:

We are pleased to provide our updated proposal for the Tapia WRF retrievable fine bubble diffuser aeration system. This quotation is based upon the selected Option 1, incorporates features enhanced by PACE, and reflects pricing increases resulting from additional diffusers and stainless steel import tariffs that have been imposed.

Our Magnum 2000 diffusers mount on 11GA 304L stainless steel 3" square tubing laterals that have ballast weights attached at 4 locations. A traverse spreader bar with hooks attaches to contractor supplied crane to perform lifting and positioning each grid into position. The following scope will be supplied from OTT:

Retrievable Fine Bubble Aeration System:

1328	Magnum 2000FS Micro Bubble Diffusers, 3" square connections with FLEX*SIL*® membranes
24	½ Magnum 1000FS Micro Bubble Diffusers, 3" square connections with FLEX*SIL*® membranes
136	Magnum 1000FS Micro Bubble Diffusers, 3" square connections with FLEX*SIL*® membranes
60	3" Square 304L 11 GA Stainless Steel Liftable Grids 21 ft long complete with 3" SCH 10 drop pipe with flanged connection, 2" lifting pipe welded to grid, 2" guide pipe secured to floor and top wall, Y fork drop pipe guide, four (4) 3" square 304 SS ballast tubes filled with iron, stainless steel shackles buoy and 304 SS wires. NOTE: 2 grids are slightly shorter. Grids come in 4 different diffuser configurations.
1	Epoxy Painted Carbon Steel Traverse lifting bar with hooks

Price, Delivered to Plant US funds ……	$ 294,654.
Sales Tax. 9.5% Los Angeles County, CA (Tax on equipment. No Tax applied on tariff) ….	$24837.75
Freight to site ……..	$7000.
Performance bond. Underwritten for the value of the project ……	$9800.
TOTAL	$336,291.75

Delivery is approximately 10 to 12 weeks after submittal approval.

Terms: Per specification

Prices include 1 week on-site installation supervision and start up during which training can be conducted. Additional days are charged at $1000 / day.

We have not included costs for furnishing supply bonding as we believe that this is superceded by the performance bond and an unnecessary added expense to the project.

We expect that it will take the contractor approximately 1 hour to assemble each grid and 1-1/4 hours to install diffusers and lower each grid into position.

We look forward to working with you. Please contact me at your convenience if you have any additional questions.

Regards,

Finian Flood

Finian Flood
Finian Flood
flood@ott-group.com
920-213-6334 Cell

Cc: Tarn Victor
JBI Water & Wastewater, Inc.
Sales Representative for OTT North America, LLC
3386 Tartan Trail
El Dorado Hills, CA

PACE
Advanced Water Engineering

AUTHORIZATION FOR CHANGE ORDER

TO:	Mr. Eric Schlageter	**ATTN:**	
	Las Virgenes Municipal Water District & The Triunfo Sanitation District Joint Power Authority	**DATE:**	October 22, 2018
	4232 Las Virgenes Road	**PROJECT:**	Tapia Process Air – B058
	Calabasas, CA 91302	**C.O. AUTHORIZATION #:**	CO #3

The following was not included in the original contract. We are requesting authorization for additional budget.

Objective of Change Order:

PACE will provide support for Additional Bid Services as outlined in the Description of Services below.

Description of Services:

BID SERVICES SUPPORT

Task 5.1 – Additional Bid Services Support
Consultant shall provide support for additional bid services for the re-bidding of the Tapia WRF Process Air Upgrades.

Task 5.1.1 – Contractor and Vendor Coordination

1. Consultant shall coordinate with the District, vendors, and contractor to identify opportunities to reduce the project overall cost. This includes contacting the contractors and subcontractors to understand if there are ambiguities in the plans or specifications that may be contributing higher cost.
2. Consultant shall coordinate with Equipment vendors to finalize cost for direct purchase by the District.
3. Consultant shall contact electrical subcontractors to notify them of the upcoming rebid and to gauge their interest in bidding. Consultant shall also discuss with subcontractors that provided bids about any ambiguities in the plans and specifications that can be further clarified to help reduce cost.

Task 5.1.2 – Revise Specifications and Bid Schedule
Consultant shall revise the specifications to include clarifications to addendums issued during the first bid. This includes revising the bid schedule to streamline the cost as well as adding allowances for components of the work with unknown quantities.

Task 5.1.3 – Revise Plans
Consultant shall revise the Tapia Process Air Upgrade Plans to include clarifications and other modifications as part of the Re-bidding process.

Task 5.1.4 – Bid Meeting and Bid Correspondences
Consultant shall attend the pre-bid meeting and shall support the District with answering any questions or correspondences from the contractor during the bid period.

Amount of Compensation:

PACE will complete the work outlined herein and invoice Client monthly on a time and expense amount of **$17,440** in accordance with the task fees listed below and in the attached Engineering Fee Proposal.

Task		Professional Fee
5.1.1	Contractor and Vendor Coordination	$ 6,880
5.1.2	Revise Specifications and Bid Schedule	$ 5,120
5.1.3	Revised Plans	$ 6,240
5.1.4	Bid Meeting and Bid Correspondences	$ 6,400

This Request - Change Order # 3: **$ 24,640**

Estimated By: _____ October 22, 2018
Duong Do, PE - PACE Date

AGREED TO AND ACCEPTED BY:

By_____ _____
LVMWD & TSD Joint Power Authority Date

ASSUMPTIONS AND EXCLUSIONS:

1. The Client's responsibilities shall include providing PACE with project information in a timely manner, coordination and management of other team consultants to assure that the project schedule can be met, and prompt payment of invoices in accordance with the terms and conditions included herein. The specific items that are to be provided by the Client or other consultants include the following:

    a. Client input pertaining to project design or construction issues that may impact PACE's ability to perform the work.
    b. Safe access to the site
    c. Power and utilities required for the validation testing

2. Any proposed project changes which affect work in progress or previously completed will be justification for additional compensation.

3. No environmental documentation or support, including no environmental permitting.

4. Local government approval meetings, hearings, etc., and preparation of presentation graphics will be under separate work authorization, if required.

5. The fees proposed herein shall apply until one year from date of proposal. Due to ever-changing costs, Consultant will increase those portions of the contract fee for which work must still be completed after one year from date of proposal, as negotiated with the Client up to a maximum of ten-percent (10%).

PACE
Advanced Water Engineering

ENGINEERING FEE PROPOSAL
PROJECT WORKSHEET

Project Data
Project Name: Tapia Process Air Services During Construction
Client: LVMWD & TSD Joint Powers Authority
PACE Job Number: B058
Estimate Date: October 22, 2018

Total Fee Amount: **$24,640**

Item No.	Work Item Description	PACE									Man-Power Subtotal	Reimburs. Expenses	Total Task Costs
		Principal	Sr. Project Manager/Sr. Consulting Engr.	Resident Construction Manager /Design Engr. II	Instrumentation Specialist	Design Engineer	Sr. CAD Designer /Sr. GIS Analyst	CAD Designer /GIS Analyst	Graphic Designer	Proj. Coord/Admin Support			
		240	210	140	150	120	120	95	95	80			
5.1	**Bid Services**	**46**	**0**	**0**	**0**	**72**	**32**	**0**	**0**	**14**	**$24,640**	**$0**	**$24,640**
5.1.1	Contractor and Vendor Coordination	16				24				2	$6,880		
5.1.2	Revise Spec and Bid Schedule	12				16				4	$5,120		
5.1.3	Revise Plans	2				16	32				$6,240		
5.1.4	Bid Meeting and Bid Correspondences	16				16				8	$6,400		
0	Reimbursable Expenses (cost +10%)												
TOTALS		46	0	0	0	72	32	0	0	14	**$24,640**	$0	**$24,640**

BEST BEST & KRIEGER LLP
ATTORNEYS AT LAW

To: Las Virgenes – Triunfo JPA Board of Directors
From: John Freshman and Ana Schwab
Date: October 24, 2018
RE: Federal Report

Water Resources Development Act

President Trump signed the America's Water Infrastructure Act (the new name for the Water Resources Development Act) into law. The House and Senate both passed the legislation with overwhelming bipartisan support.

Items to note, the WRDA bill directs the Secretary of the Army to examine moving the Army Corps of Engineers Civil Works Division out of the Department of Defense. The legislation removes overly cumbersome review process for non-federal project sponsor lead development, aims to address LEDPA issue. Next the legislation reauthorizes the WIFIA program through 2021 at $50 million annually. WRDA directs the EPA Administrator and the Bureau of Reclamation Commissioner to enter into an agreement for infrastructure financing within a year of the law being enacted. The legislation goes on to set up a task force of federal, state, and local governments and private entities to conduct a study on, and develop recommendations to improve, the availability of public and private sources of funding for the construction, rehabilitation, and operation and maintenance of stormwater infrastructure to meet requirements of the Federal Water Pollution Control Act. Lastly, the Republican and Democrats agreed to Report language on the Water Transfers Rule – report language does not carry the force of law.

Federal Budget and Appropriations

President Trump signed five FY19 spending bills into law before the September 30th deadline, this covers approximately 80% of discretionary spending. Within the last package of bills was a Continuing Resolution to cover the remaining four spending bills: Interior-Environment, Financial Services, Transportation-Housing and Urban Development, and Agriculture-FDA.

This is a drastic turn from FY18 appropriations in which the Senate did not hold a floor vote on any of the appropriation bills and a 12-bill omnibus was sent to the President in March 2018, after a series of Continuing Resolutions.

Speaker Paul Ryan has not ruled out a partial government shutdown on those agencies and departments whose funding expires on December 7, 2018. The Speaker said that Republicans will push hard to secure additional border wall funding in the December appropriations negotiations.

Elections Update

Both chambers of Congress are now in recess through the election. The election is proving to be hotly contested. Many are saying that the Democrats are in a position to gain the majority back in the House of Representatives. There are also a number of Senate seats up for both parties, however many pollsters are saying that the Republicans will be able to maintain the majority in the Senate.

It is important to note that whichever party has control of either chamber of Congress, BB&K is uniquely positioned with strong relationships on both sides of the aisle. Once the election there will be a change in a number of Chairmanships and Ranking Members. BB&K will provide an update on this once the positions are learned.

Presidential Memorandum on Promoting the Rliable Supply and Delivery of Water in the West

On October 19, President Trump signed a Presidential Memorandum aimed to promote the reliable supply and delivery of water in the West. A goal of the memorandum is to speed up environmental reviews and streamline regulations that are hindering work on major water projects in California and throughout the West. The announcement is a boost for Republicans in the Central Valley of California who are facing tough challenges from Democrats in the upcoming midterm election.

LAS VIRGENES-TRIUNFO - HIGH PRIORITY LEGISLATION IN THE 115TH CONGRESS
OCTOBER 2018

Legislation	Summary	Status	Position
H.R. 23 – Gaining Responsibility on Water Act of 2017	This legislation will allow for more water conveyance while protecting the water rights of users, as well. Additionally, the legislation reforms the Central Valley Project Improvement Act and the San Joaquin River Restoration Settlement Act. This legislation would reduce the cost of water delivery contracts and would give users more authority over how restoration funds are spent. The bill purports to expand on a compromise reached between Sen. Dianne Feinstein (D-CA) and House Majority Leader Kevin McCarthy (R-CA) during last year's Water Infrastructure Improvements for the Nation Act discussion. The compromise directed more water to farms by tweaking the way rules meant to protect endangered fish are interpreted when operating the State's waterways.	Introduced by Rep. David Valadao – January 3, 2017 Passed the House of Representatives on July 12, 2017. This measure has not been taken up in the Senate yet.	
H.R. 434 – New Water Available to Every Reclamation State Act or the New WATER Act	This legislation authorizes the Department of the Interior to provide financial assistance, such as loans and guarantees, to entities that contract under federal reclamation law to carry out water projects within the 17 western states served by the Bureau of Reclamation, and Alaska and Hawaii. Eligible Projects include: • non-federal water infrastructure projects that would contribute to a safe, adequate water supply for domestic, agricultural, environmental, or municipal and industrial use; • projects for enhanced energy efficiency in the operation of a water system; • projects for accelerated repair and replacement of aging water distribution facilities; • brackish or sea water desalination projects; and • the acquisition of real property or an interest therein for water storage, reclaimed or recycled water, or wastewater that is integral to such a project.	Introduced by Rep. Jeff Denham – January 11, 2017	

Legislation-con't	Summary-con't	Status-con't	Position-con't
H.R. 448 – Water Conservation Rebate Tax Parity Act	This bill amends the Internal Revenue Code to expand the tax exclusion for energy conservation subsidies provided by public utilities to exclude from gross income subsidies provided (directly or indirectly): (1) by a public utility to a customer, or by a state or local government to a resident of such state or locality, for the purchase or installation of any water conservation or efficiency measure; and (2) by a storm water management provider to a customer, or by a state or local government to a resident of such state or locality, for the purchase or installation of any storm water management measure.	Introduced by Rep. Jared Huffman and Rep. Dana Rohrabacher – January 11, 2017	
S. 32 – California Desert Protection and Recreation Act of 2017	This bill amends the California Desert Protection Act of 1994 to, among other things: • establish or designate wilderness areas, a special management area, off-highway vehicle recreation areas, and a national scenic area; • release specified wilderness study areas; • adjust national park and preserve boundaries; and • specify land withdrawals and conveyances. Specified federal land shall be taken into trust for the Lone Pine Paiute-Shoshone Tribe. Lands and interests in land, including improvements, outside the boundary of Joshua Tree National Park in California may be acquired for the purpose of operating a visitor center. The bill makes amendments to the California Desert Protection Act of 1994 regarding the California State School lands. The bill amends the Wild and Scenic Rivers Act to designate specified segments of rivers and creeks as components of the National Wild and Scenic Rivers System. The bill establishes the Renewable Energy Resource Conservation Fund for use in regions impacted by the development of wind or solar energy.	Introduced by Sen. Dianne Feinstein – January 5, 2017 Reported Favorably out of the Committee on Energy and Natural Resources on October 2, 2018	

Legislation-con't	Summary-con't	Status-con't	Position-con't
S. 692 – Water Infrastructure Flexibility Act	To provide for integrated plan permits, to establish an Office of the Municipal Ombudsman, to promote green infrastructure, and to require the revision of financial capability guidance.	Introduced by Sen. Deb Fischer – March 21, 2017 Passed the Senate on October 5, 2017 This action has not yet been taken up by the House	
H.R. 5596 – Water Infrastructure Resiliency and Sustainability Act of 2018	To authorize the Administrator of the Environmental Protection Agency to establish a program of awarding grants to owners or operators of water systems to increase resiliency or adaptability of the systems to any ongoing or forecasted changes to the hydrologic conditions of a region of the United States.	Introduced by Rep. Salud Carbajal – April 24, 2018	
H.R. 5609 – Water Affordability, Transparency, Equity, and Reliability Act of 2018	To establish a trust fund to provide for adequate funding for water and sewer infrastructure, and for other purposes.	Introduced by Rep. Keith Ellison – April 25, 2018	
S. 2771 – Residential Decentralized Wastewater System Improvement Act	To amend the Federal Water Pollution Control Act to require the Administrator of the Environmental Protection Agency to provide grants for the construction, refurbishing, and servicing of individual household decentralized wastewater systems to individuals with low or moderate income.	Introduced by Sen. Cory Booker – April 26, 2018	
S. 2772 – A bill to amend the Consolidated Farm and Rural Development Act to modify provisions relating to the household water well system grant program.	To amend the Consolidated Farm and Rural Development Act to modify provisions relating to the household water well system grant program.	Introduced by Sen. Cory Booker – April 26, 2018	
H.R. 2510 – Water Quality Protection and Job Creation Act of 2017	To amend the Federal Water Pollution Control Act to authorize appropriations for State water pollution control revolving funds, and for other purposes.	Introduced by Rep. Peter DeFazio – May 18, 2017	

Legislation-con't	Summary-con't	Status-con't	Position-con't
S. 2800 – America's Water Infrastructure Act of 2018	To provide for the conservation and development of water and related resources, to authorize the Secretary of the Army to construct various projects for improvements to rivers and harbors of the United States, and for other purposes.	Introduced by Sen. John Barrasso – May 8, 2018 Signed into law by President Trump on October 23, 2018	
H.R. 8 – Water Resources Development Act of 2018	To provide for improvements to the rivers and harbors of the United States, to provide for the conservation and development of water and related resources, and for other purposes.	Introduced by Rep. Bill Shuster – May 18, 2018 Passed the House on June 6, 2018	
S. 2969 – Rural Water Infrastructure Improvement Act of 2019	To amend the Consolidated Farm and Rural Development Act to improve water or waste disposal grants or direct or guaranteed loans, and for other purposes.	Introduced by Sen. Tammy Baldwin – May 24, 2018	
H.Res. 923 – Providing for further consideration of the bill (H.R. 5895)	Providing for further consideration of the bill (H.R. 5895) making appropriations for energy and water development and related agencies for the fiscal year ending September 30, 2019, and for other purposes, and providing for consideration of the bill (H.R. 3) to rescind certain budget authority proposed to be rescinded in special messages transmitted to the Congress by the President on May 8, 2018, in accordance with title X of the Congressional Budget and Impoundment Control Act 1974.	Introduced by Rep. Michael Burgess – June 6, 2018 Passed the House on June 7, 2018	
S. 3012 – Water Technology Acceleration Act	To establish an innovative water technology grant program and to amend the Safe Drinking Water Act and the Federal Water Pollution Control Act to encourage the use of innovative water technology, and for other purposes.	Introduced by Sen. Tammy Baldwin – June 6, 2018	
S. 3015 – Water Affordability Act	To amend the Federal Water Pollution Control Act to establish a low-income sewer and drinking water assistance pilot program, and for other purposes.	Introduced by Sen. Kamala Harris – June 6, 2018	

Legislation-con't	Summary-con't	Status-con't	Position-con't
S. 3001 – Contra Costa Canal Transfer Act	To authorize the Secretary of the Interior to convey certain land and facilities of the Central Valley Project.	Introduced by Sen. Diane Feinstein – June 6, 2018 Reported favorably out of the Committee on Energy and Natural Resources on October 2, 2018	
H.R. 6040 – Contra Costa Canal Transfer Act	To authorize the Secretary of the Interior to convey certain land and facilities of the Central Valley Project.	Introduced by Rep. Mark DeSaulnier – June 7, 2018 Passed out of the House on September 12, 2018 Reported favorably out of the Committee on Energy and Natural Resources on October 2, 2018	
S. 3087 – Living Shorelines Act of 2018	To direct the Administrator of the National Oceanic and Atmospheric Administration to make grants to State and local governments and nonprofit organizations for purposes of carrying out shoreline stabilization projects utilizing natural materials that support natural habitats and ecosystem functions, and for other purposes.	Introduced by Sen. Kamala Harris – June 19, 2018	
S. 3121 – Water Infrastructure Transparency Act	To amend the Federal Water Pollution Control Act, the Safe Drinking Water Act, and the Water Infrastructure Finance and Innovation Act of 2014 to require maximum open and free competition in procurement for projects receiving assistance under those Acts, and for other purposes.	Introduced by Sen. Rand Paul – June 25, 2018	

Legislation-con't	Summary-con't	Status-con't	Position-con't
H.R. 6267 – COAST Research Act	To amend the Federal Ocean Acidification Research and Monitoring Act of 2009 to establish an Ocean Acidification Advisory Board, to expand and improve the research on Ocean Acidification and Coastal Acidification, to establish and maintain a data archive system for Ocean Acidification data and Coastal Acidification data, and for other purposes.	Introduced by Rep. Suzanne Bonamici – June 28, 2018	
S. 3192 – Contaminant and Lead Electronic Accounting and Reporting Requirements (CLEARR) for Drinking Water Act of 2018	To amend the Safe Drinking Water Act to update and modernize the reporting requirements for contaminants, including lead, in drinking water, and for other purposes.	Introduced by Sen. Ed Markey – July 11, 2018	
H.R. 6354 – STORAGE Act of 2018	To amend the Endangered Species Act of 1973 to prohibit designation as critical habitat of certain areas in artificial water diversion or delivery facilities.	Introduced by Rep. Paul Gosar – July 12, 2018 Natural Resources Committee Hearing held on September 26, 2018	
S. 3303 – Water Quality Certification Improvement Act of 2018	To amend the Federal Water Pollution Control Act to make changes with respect to water quality certification, and for other purposes.	Introduced by Sen. John Barrasso – July 31, 2018 EPW Committee Heraring held on August 16, 2018	*Watch*
S. 3341 – IMAGINE Act	To encourage the research and use of innovative materials and associated techniques in the construction and preservation of the domestic transportation and water infrastructure system, and for other purposes.	Introduced by Sen. Sheldon Whitehouse – August 1, 2018	*Watch*
H.R. 6653 – IMAGINE Act	To encourage the research and use of innovative materials and associated techniques in the construction and preservation of the domestic transportation and water infrastructure system, and for other purposes.	Introduced by Rep. Elizabeth Etsy – August 3, 2018	*Watch*

Legislation-con't	Summary-con't	Status-con't	Position-con't
S. 3358 – Sustainable Water Infrastructure Investment Act of 2018	A bill to amend the Internal Revenue Code of 1986 to provide that the volume cap for private activity bonds shall not apply to bonds for facilities for furnishing of water and sewage facilities.	Introduced by Sen. Bob Menendez – August 21, 2018	
S. 3381 – PFAS Accountability Act of 2018	A bill to encourage Federal agencies to expeditiously enter into or amend cooperative agreements with States for removal and remedial actions to address PFAS contamination in drinking, surface, and ground water and land surface and subsurface strata, and for other purposes	Introduced by Sen. Debbie Stabenow – August 23, 2018	
S. 3382 – PFAS Detection Act of 2018	A bill to require the Director of the United States Geological Survey to perform a nationwide survey of perfluorinated compounds, and for other purposes.	Introduced by Sen. Debbie Stabenow – August 23, 2018	
S. 3394 – Comprehensive National Mercury Monitoring Act	A bill to establish a national mercury monitoring program, and for other purposes.	Introduced by Sen. Susan Collins – August 28, 2018	
H.R. 6705 – To amend the Safe Drinking Water Act to require the Administrator of the Environmental Protection Agency to publish a maximum contaminant level goal and promulgate a national primary drinking water regulation for perchlorate, and for other purposes.	To amend the Safe Drinking Water Act to require the Administrator of the Environmental Protection Agency to publish a maximum contaminant level goal and promulgate a national primary drinking water regulation for perchlorate, and for other purposes	Introduced by Rep. Tony Cardenas – September 5, 2018	
H.R. 6727 – Water Technology Acceleration Act	To establish an innovative water technology grant program and to amend the Safe Drinking Water Act and the Federal Water Pollution Control Act to encourage the use of emerging and innovative water technology, and for other purposes.	Introduced by Rep. Gwen Moore – September 6, 2018	

Legislation-con't	Summary-con't	Status-con't	Position-con't
H.R. 6750 – Santa Monica Mountains National Recreation Area Boundary Adjustment Study Act	To direct the Secretary of the Interior to conduct a special resource study of portions of the Los Angeles coastal area in the State of California to evaluate alternatives for protecting the resources of the coastal area, and for other purposes.	Introduced by Rep. Ted Lieu – September 7, 2018	
H.R. 6759 – Land and Water Conservation Authorization and Funding Act	To amend title 54, United States Code, to provide consistent and reliable authority for, and for the funding of, the Land and Water Conservation Fund to maximize the effectiveness of the Fund for future generations, and for other purposes.	Introduced by Rep. Raul Grijalva – September 10, 2018	
H.R. 6782 – Sustainable Water Supplies Act	To determine the feasibility of additional agreements for long-term use of existing or expanded non-Federal storage and conveyance facilities to augment Federal water supply, ecosystem, and operational flexibility benefits in certain areas, and for other purposes.	Introduced by Rep. Mark DeSaulnier – September 12, 2018	
H.R. 6804 – Onsite Wastewater Recycling Efficiency Act	To improve processes for alternative wastewater systems, and for other purposes.	Introduced by Rep. Brian Babin – September 13, 2018	
H.R. 6818 – Clean Water Infrastructure Act	To amend the Safe Drinking Water Act to increase assistance for States, water systems, and disadvantaged communities; to encourage good financial and environmental management of water systems; and to strengthen the Environmental Protection Agency's ability to enforce the requirements of the Act, and for other purposes.	Introduced by Rep. A. Donald McEachin – September 13, 2018	
H.R. 6835 – PFAS Federal Facility Accountability Act of 2018	To encourage Federal agencies to enter into or amend cooperative agreements with States for removal and remedial actions to address PFAS contamination in drinking water, surface water, ground water, sediment, and soil, and for other purposes.	Introduced by Rep. Fred Upton – September 17, 2018	
H.R. 6889 – Water Quality Certification Improvement Act of 2018	To amend the Federal Water Pollution Control Act to make changes with respect to water quality certification, and for other purposes.	Introduced by Rep. David McKinley – September 25, 2018	

Legislation-con't	Summary-con't	Status-con't	Position-con't
H.R. 6944 – Clean Water Through Green Infrastructure Act	This bill requires the Environmental Protection Agency (EPA) to provide grants to eligible higher education institutions and research institutions to establish and maintain between three and five centers of excellence for innovative stormwater control infrastructure, which is any green stormwater management technique that: (1) uses natural systems or engineered systems that mimic natural processes to infiltrate, evapotranspire, or capture stormwater; and (2) preserves, enhances, or mimics natural hydrology to protect or restore water quality. One of the centers must be the national electronic clearinghouse center and operate a website and a public database on the infrastructure. In addition, the EPA must provide grants to state, tribal, or local governments or entities that manage stormwater, drinking water resources, or wastewater resources for innovative stormwater control infrastructure projects. The EPA must ensure that: (1) EPA's Office of Water, Office of Enforcement and Compliance, Office of Research and Development, and Office of Policy promote the use of the infrastructure in, and coordinate the integration of, permitting programs, planning efforts, research, technical assistance, and funding guidance; and (2) the Office of Water supports establishing innovative financing mechanisms in the implementation of the infrastructure. The EPA must: (1) direct each EPA regional office to promote and integrate the use of the infrastructure within the region, and (2) promote sharing information about the infrastructure approaches. The EPA must establish the innovative stormwater control infrastructure portfolio standard of voluntary, measurable goals to increase the percentage of annual water managed by entities that use the infrastructure.	Introduced by Rep. Denny Heck – September 27, 2018	
H.R. 6961 – DRIP Act	To direct the Secretary of Agriculture to carry out a grant program to award grants to qualified partnerships to remove non-native plant species that contribute to drought conditions, and for other purposes.	Introduced by Rep. Krysten Sinema – September 27, 2018	
H.R. 6966 – AQUAA Act	To establish a regulatory system for marine aquaculture in the United States exclusive economic zone, and for other purposes. With the purposes to: (1) to support the development of a sustainable marine aquaculture industry in the United States; (2) to safeguard the marine environment, wild fish stocks, and our coastal communities; (3) to support research and technology development to further these goals; (4) to provide new jobs and to support existing jobs within the seafood industry of the United States, including jobs for traditional fishing industry partners; and (5) to reduce the United States seafood trade deficit by expanding the domestic supply of seafood through the production of marine aquaculture.	Introduced by Rep. Steven Palazzo – September 28, 2018	

Legislation-con't	Summary-con't	Status-con't	Position-con't
H.R. 7041 – P3 Act	To amend the Internal Revenue Code of 1986 to include green infrastructure bonds in the definition of qualified private activity bonds.	Introduced by Rep. Derek Kilmer – October 5, 2018	
S. 3564 – Low-Income Water Customer Assistance Programs Act of 2018	A bill to amend the Safe Drinking Water Act and the Federal Water Pollution Control Act to establish pilot programs to assist low-income households in maintaining access to sanitation services and drinking water, and for other purposes.	Introduced by Sen. Ben Cardin – October 10, 2018	
H.R. 7078 – Protection from Algal Toxins Act	To amend the Safe Drinking Water Act to require the Administrator of the Environmental Protection Agency to publish a maximum contaminant level goal and promulgate a national primary drinking water regulation for microcystin toxin, and for other purposes.	Introduced by Rep. Marcy Kaptur – October 19, 2018	

FY2019 Appropriations

Legislation	Summary	Status	Position
H.R. 5895 – Energy and Water Development and Related Agencies Appropriations Act, 2019	Funding for the Army Corps of Engineers , the Department of the Interior – Bureau of Reclamation, and the Department of Energy	Introduced by Rep. Michael Simpson – May 21, 2018 Signed into Law on September 21, 2018	
S. 2975 – Energy and Water Development and Related Agencies Appropriations Act, 2019	Funding for the Army Corps of Engineers , the Department of the Interior – Bureau of Reclamation, and the Department of Energy	Introduced by Sen. Lamar Alexander – May 24, 2018 Signed into Law on September 21, 2018	
House Interior, Environment, and Related Agencies Appropriations Act, 2019	Funding for the Department of the Interior, the Environmental Protection Agency, the Forest Service, the Indian Health Service, and various independent and related agencies.	Introduced by Rep. Ken Calvert Passed the House on July 19, 2018 (At FY18 levels until December 7, 2018 due to a Continuing Resolution)	

Legislation – con't	Summary	Status	Position – con't
Senate Interior, Environment, and Related Agencies Appropriations Act, 2019	Funding for the Department of the Interior, the Environmental Protection Agency, the Forest Service, the Indian Health Service, and various independent and related agencies.	Introduced by Sen. Lisa Murkowski Passed the Senate Interior Appropriations Subcommittee on June 12, 2018 (At FY18 levels until December 7, 2018 due to a Continuing Resolution)	

ITEM 11B

INFORMATION ONLY

November 5, 2018 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Rancho Digester No. 2 Cleaning: Call for Bids

The Las Virgenes-Triunfo Joint Powers Authority (JPA) approved funding for this matter in the Joint Powers Authority Budget. On October 9, 2018, the LVMWD Board of Directors, acting as the Administering Agent of the JPA, authorized the General Manager to issue a Call for Bids for the Rancho Las Virgenes Digester Cleaning and Repair Project and found the work to be categorically exempt from the California Environmental Quality Act.

SUMMARY:

The Rancho Las Virgenes Digester Cleaning and Repair Project is a two-phase, multi-year project to repair and rehabilitate Digester Nos. 1 and 2 at the Rancho Las Virgenes Composting Facility. On August 28, 2018, the LVMWD Board accepted the completion of the rehabilitation for Digester No. 1, which had been in continuous operation for 24 years. The next step is to clean and rehabilitate Digester No. 2. The existing sludge must be removed from the digester to inspect and perform a condition assessment for design of the rehabilitation work. The scope of work for the cleaning consists of removing and disposing of digested sludge, scum, grit, grease, rags and other debris and to pressure wash the interior surfaces of the digester. The work is categorically exempt from the California Environmental Quality Act (CEQA) per Section 15301, Existing Facilities, of the CEQA Guidelines.

FISCAL IMPACT:

No

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

There is no financial impact associated with the issuance of a Call for Bids.

DISCUSSION:

Industry standards call for digesters to be cleaned once every ten years of operation. However, due to the lack of redundancy, the two existing digesters could not be taken out of service for cleaning until the new third digester was constructed and in full operation. Digester No. 3 was completed in January 2015, allowing for cleaning and rehabilitation of Digester Nos. 1 and 2. Rehabilitation of Digester No. 1 was completed in August 2018. Work can now proceed to allow for the rehabilitation of Digester No. 2, beginning with the cleaning process.

Staff will remove most of the 1.16 million gallons of sludge from Digester No. 2 using existing equipment, but the estimated remaining volume of 425,000 gallons of sludge will need to be removed by a contractor with specialized equipment. Staff's goal will be to perform a thorough inspection of the digester once it is cleaned, identifying and performing any necessary repair work before the digester is placed back in service.

The proposed bid schedule is as follows:

Call for Bids	October 9, 2018
1st Advertisement	October 11, 2018
2nd Advertisement	October 18, 2018
Pre-Bid Meeting	October 24, 2018
Bid Opening	November 7, 2018
Award of Contract	December 5, 2018

The work is categorically exempt from the California Environmental Quality Act (CEQA), pursuant to Section 15301(b) of the CEQA Guidelines because it involves only minor alterations to an existing facility with no expansion of use. Attached is the Notice of Exemption that staff filed for the project, following Board approval of the CEQA determination.

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

ATTACHMENTS:

Notice Inviting Bids
Notice of Exemption

NOTICE INVITING SEALED PROPOSALS (BIDS)
Digester 2 Cleaning Project

NOTICE IS HEREBY GIVEN that the Board of Directors of the Las Virgenes Municipal Water District invites and will receive sealed proposals (bids) up to the hour of 3:00PM on November 7, 2018, for furnishing the work described in the contract documents. Bids received after the time stated in the Call for Bids will not be accepted and will be returned, unopened, to the bidder. The time shall be determined by the time on the receptionist telephone console in our Headquarters lobby. Proposals will be publicly opened and read aloud at the office of the Las Virgenes Municipal Water District, 4232 Las Virgenes Road, Calabasas, California 91302. Said bids shall conform to and be responsive to the Specifications and Contract Documents for said work as heretofore approved by the District.

*A **mandatory** pre-bid tour will be conducted at 9:00AM on October 24, 2018. The meeting will begin at the District headquarters at 4232 Las Virgenes Road, Calabasas, CA 91302. Attendance at the pre-bid conference is a condition precedent to submittal of the bid and the District will not consider a bid from any bidder not represented at the pre-bid conference. Questions regarding the project may be directed to Project Manager Coleman Olinger, P.E. at (818) 251-2163.*

Sets of contract documents may be downloaded for free by going to http://www.LVMWD.com/Ebidboard and following the links to this project.

In order to be placed on the plan holder's list, contractors shall register for free as a document holder for this project on Ebidboard by going to www.LVMWD.com/Ebidboard and following the links to this project. Addendum notifications will be issued through Ebidboard.com, but may also be provided by calling the District's Project Manager. Although Ebidboard will fax and/or email all notifications to registered plan holders after the District uploads the information, Bidders are responsible for obtaining all addenda and updated contract documents.

Each bid must be on the District bid form and shall be sealed and filed with the secretary of the District at or before the time stated in the Notice.

No Contractor or Subcontractor may be listed on a bid proposal for a public works project submitted on or after March 1, 2015 unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. No Contractor or Subcontractor may be awarded a contract for public work on a public works project awarded on or after April 1, 2015 unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. Effective January 1, 2016, no Contractor or Subcontractor may perform on a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. This project is subject to compliance monitoring and enforcement by the DIR.

All terms and conditions contained in the Specifications and Contract Documents shall become part of the contract. The Las Virgenes Municipal Water District reserves the right

to reject any and all bids and to waive any and all irregularities in any bid. No bidder may withdraw his bid after the said time for bid openings until 60-days thereafter or until the District has made a final award to the successful bidder or has rejected all bids, whichever event first occurs.

The Las Virgenes Municipal Water District reserves the right to select the schedule(s) under which the bids are to be compared and contract(s) awarded.

BY ORDER OF THE GOVERNING BODY OF
LAS VIRGENES MUNICIPAL WATER DISTRICT

_____ _____

Dated

Jay Lewitt
Secretary of the Board

Print Form

Notice of Exemption

Appendix E

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

County Clerk
County of: Los Angeles
12400 Imperial Highway
Norwalk, CA 90650

From: (Public Agency): Las Virgenes Municipal Water Dis
4232 Las Virgenes Road
Calabasas, CA 91302
(Address)

Project Title: Digester #2 Cleaning

Project Applicant: Las Virgenes Municipal Water District

Project Location - Specific:

Rancho Las Virgenes Composting Facility, 3700 Las Virgenes Road, Calabasas, CA 91302

Project Location - City: Calabasas Project Location - County: Los Angeles

Description of Nature, Purpose and Beneficiaries of Project:
Removing and disposing of digested sludge, scum, grit, hair, rags and other debris, and pressure washing the interior surface of the digester. Industry standard dictates cleaning once every ten years of operation.

Name of Public Agency Approving Project: Las Virgenes Municipal Water District

Name of Person or Agency Carrying Out Project: Las Virgenes Municipal Water District

Exempt Status: **(check one):**

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☒ Categorical Exemption. State type and section number: Existing Facilities: Section 15301
- ☐ Statutory Exemptions. State code number: _____

Reasons why project is exempt:
The project involves cleaning of an existing facility with no addition or expansion of use. The project would not have a significant effect on the environment.

Lead Agency Contact Person: Coleman Olinger P.E. Area Code/Telephone/Extension: 818-251-2163

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☐ Yes ☐ No

Signature: _____ Date: _____ Title: Associate Engineer

☒ Signed by Lead Agency ☐ Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR: _____

ITEM 11C

INFORMATION ONLY

November 5, 2018 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Tapia SCADA System Upgrade: Award of Scoping Services Proposal

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The Las Virgenes-Triunfo Joint Powers Authority (JPA) approved funding for this matter in the Joint Powers Authority Budget. On October 23, 2018, the LVMWD Board of Directors, acting as the Administering Agent of the JPA, authorized the General Manager to accept a proposal from Wunderlich-Malec and execute a Professional Services Agreement, in the amount of $79,700, to provide the scoping services for the Tapia SCADA System Upgrade Project.

SUMMARY:

On June 26, 2018, the Board authorized the issuance of a Request for Proposals (RFP) to develop plans and specifications for the Tapia SCADA System Upgrade Project using either Rockwell Automation programmable logic controllers (PLCs) with the Schneider Wonderware human machine interface (HMI) or Schnieder Modicon PLCs with the Schneider Wonderware HMI.

Preparation of the RFP for the Tapia SCADA system upgrade required the assistance of an experienced integration and controls consultant to identify and develop the project's scope of work and create bridging documents. These services included field verification activities, schematic development and updates, and defined requirements for system integration activities associated with the upgrade.

Wunderlich-Malec will assist the District in developing the design elements required for the project. In addition, the consultant will prepare an RFP that provides a clear and defined scope of work and accurately document the configuration of the existing SCADA infrastructure at Tapia. These activities are necessary to develop the RFP's scope of work in sufficient detail to provide an equal understanding of the project scope to potential bidders and to support a fair and competitive bidding environment. Additionally, Wunderlich-Malec will assist the District in developing SCADA standards for programming, HMI and PLCs to be included in the future upgrade project. Development of standards that will allow for consistency of equipment and programming of the SCADA system across District facilities and enable staff to focus on specific training and skill sets.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

Sufficient funds were available in the adopted Fiscal Year 2018-19 Budget for the work.

DISCUSSION:

The District uses a Supervisory Control and Data Acquisition (SCADA) system for its wastewater treatment, potable water and recycled water facilities. The SCADA system provides automation of processes, alarm protocols, data collection for analysis and reporting, and remote control and monitoring of processes and equipment. The SCADA network includes field instruments, programmable logic controllers (PLCs), a communication network and a human machine interface (HMI).

Most of the PLCs installed at the Tapia Water Reclamation Facility are obsolete and no longer available or supported by the manufacturer. The District's current HMI is also obsolete and cumbersome due to its age and modifications that have been made over time. Many expansions, modifications and capital improvements have been made at Tapia over its 53 years of service, and there is limited documentation of the existing SCADA infrastructure. A comprehensive as-built network schematic of the field inputs and outputs, hardware, HMI, software and communication protocols is not available. Documenting the existing SCADA infrastructure is necessary as part of the RFP development process to enable interested firms to have an equal understanding of the project scope and to support a fair and competitive bidding environment.

The purpose and intent of the proposal from Wunderlich-Malec is to provide professional services to assist the District in developing as-built documentation of the SCADA infrastructure at the Tapia Water Reclamation Facility and to provide scope and bidding documents to solicit bids for the Tapia SCADA System Upgrade Project.

Staff recommended accepting the proposal from Wunderlich-Malec, in the amount of $79,700, to assist the District in developing the RFP necessary to provide scope and bidding documents for the Tapia SCADA system upgrade.

Prepared by: Eric Schlageter, P.E., Senior Engineer

ITEM 11D

INFORMATION ONLY

November 5, 2018 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Tapia Water Reclamation Facility Chloride Study: Identification of Options Report

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SUMMARY:

On November 6, 2017, the JPA Board accepted a proposal from Larry Walker Associates, Inc. (LWA), to perform the Tapia Water Reclamation Facility Chloride Study. The study is required by a Time Schedule Order (TSO) in the 2017 Tapia NPDES Permit. The purpose of the study is to evaluate and address levels of chloride discharged from Tapia to the Los Angeles River. The Los Angeles River discharge concentration limit for chlorides will be reduced from 190 to 150 mg/L, effective August 1, 2022, unless the regulatory limit is amended by the Los Angeles Regional Water Quality Control Board (LARWQCB).

Attached is a copy of the Chloride Identification of Options Report, which is the third of four sub-reports included as part of the chloride study. The report is required to be submitted to the LARWQB by January 1, 2020. The purpose of this report is to use the information from the previously completed Chloride Source Investigation and Evaluation to identify potential implementation and/or regulatory options for meeting or adjusting the chloride effluent limitations.

In the report, options to reduce chloride effluent concentrations are examined, including: UV disinfection, and public outreach efforts, including customer outreach and removal incentives for self-regenerating water softeners. Alternatively, potential regulatory solutions were evaluated, including: development of a site-specific objective, adoption of U.S. EPA criteria of 230 mg/L, a variance or implementation of a basin plan amendment.

The report concludes that the JPA should propose development of a chloride site-specific objective of 190 mg/L based on the analysis and precedent established through Order No. 97-02 and recommend amendment of the Basin Plan to include the objective. The proposed approach is to align the Basin Plan objectives with the other chloride objectives in the Los Angeles River to reflect the beneficial uses that are present in the watershed.

The fourth and final report is a Recommendation Report that will present supporting data for a proposed regulatory action and possible source reduction strategies such as increased outreach regarding water softeners/conditioners. The Recommendation Report is also due by January 1, 2020.

FISCAL IMPACT:

No

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

There is no financial impact directly associated with the Chloride Evaluation of Options Report.

DISCUSSION:

In 1999, Tapia began periodically discharging its treated effluent to the Los Angeles River to comply with a prohibition on discharges to Malibu Creek from April 15th to November 15th each year. Discharges to the Los Angeles River were originally permitted under NPDES Order No. 99-066, which prescribed a chloride limit of 190 mg/L rather than the 150 mg/L Basin Plan Water Quality Objective. The rationale for the higher chloride limit was LARWQCB Resolution No. 97-02 that revised the chloride limit from 150 mg/L to 190 mg/L for various surface waters, including certain reaches of the Los Angeles River, due to the impacts of drought on chloride levels in potable source waters. The 190 mg/L chloride limit for discharge has been maintained in all subsequent permits for Tapia based on the same rationale.

During the renewal of Tapia's NPDES permit in 2017, LARWQCB staff discovered that the long-standing application of Resolution No. 97-02 was in error because it only covered the portions of the Los Angeles River downstream of the Sepulveda Flood Control Basin and Tapia's discharge occurs upstream. The reason that the 1997 Resolution did not include the portions of the Los Angeles River upstream of Sepulveda Flood Control Basin is because there were no discharges upstream of the Tillman Water Reclamation Plant, which is adjacent the Sepulveda Flood Control Basin, at that time. Tapia's permitted-discharges to the upstream reach of the Los Angeles River did not begin until two years later in 1999.

Tapia's discharge to the Los Angeles River is vital to the success of the Pure Water Project Las Virgenes-Triunfo. The new NPDES permit has stipulations that allow for discharge to Malibu Creek during heavy rain events when daily flows exceed 11 MGD. The rationale for the 11 MGD trigger point was that 6 MGD could be sent to the advanced water treatment facility and 5 MGD could be pumped to the Los Angeles River. If the option to discharge to the Los Angeles River is not available, then the capacity to dispose of excess effluent during heavy rain events is reduced to 6 MGD. Additionally, discharge to the Los Angeles River may also be necessary to dispose of small amounts of effluent when there is not enough water available to start up and maintain operation of the advanced water treatment plant.

During the draft permit comment period, JPA staff requested that the LARWQCB issue a Time Schedule Order (TSO), which would culminate in a proposed Basin Plan Amendment. At the June 1, 2017 permit hearing, the LARWQCB issued a TSO, which requires a study containing four sub-reports, implementation of a proposed regulatory solution and confirmation. These reports include: an investigation into chloride sources, an evaluation of the impact of chloride levels and source control, an identification of options to address compliance

including regulatory remedies, a recommendation, implementation, and confirmation of compliance. Larry Walker Associates, Inc. was retained to complete the first four of these sub-reports.

The identification of options to address compliance, which is the third of four reports included in LWA's scope of work, is the subject of this memorandum. Below is a summary of the report.

Controllable or partially controllable sources comprise about 40% of Tapia's effluent chloride load. The largest partially controllable source of the effluent chloride load is residential water softeners (based upon estimated numbers of softeners in the service area). The largest controllable source of the effluent chloride load is the sodium hypochlorite use for disinfection at Tapia. Controllable chloride load sources comprise a very small portion of the total chloride load.

To achieve chloride load reductions from the controllable sources necessary to meet effluent limitations, all of the in-plant chloride sources or approximately half of the residential water softener loading would need to be reduced. Addressing in-plant sources would require a large capital investment (estimated to be $18,000,000), and significant on-going operations and maintenance costs (estimated to be $600,000 annually). Additionally, the loading reductions may not be enough to cover potential future increases in chloride concentrations due to drought conditions and water conservation, necessitating additional load reductions.

Additional reductions in chloride load can be achieved by reducing the number of water softeners in the service area; however, achieving at least a 50% reduction in water softeners may be challenging. Self-regenerating water softeners are already banned in the service area and the estimated percentage of water softeners in the service area is already very low. Targeted outreach and education to change behavior in the estimated 5% of the households in the service area with self-regenerating water softeners is likely to involve significant effort and time.

The reaches to which Tapia discharges in the Los Angeles River Watershed do not have any existing or potential agricultural beneficial uses. With no existing or potential agricultural beneficial uses in Arroyo Calabasas or downstream reaches of the Los Angeles River, chloride water quality objectives set at 150 mg/L to protect the agricultural beneficial use is not necessary. Based on the analysis of options the report, it is recommended that the JPA propose to develop a site-specific objective of 190 mg/L based on the analysis and precedent in Order 97-02 and amend the Basin Plan to include this objective. The proposed approach is to align the Basin Plan objectives with the other chloride objectives in the Los Angeles River to reflect the beneficial uses that are present in the watershed. The existing Tapia effluent concentration (164 mg/L on average) is less than the recommended site-specific objective of 190 mg/L.

The fourth and final report is a Recommendation Report that will present supporting data for a proposed regulatory action and possible source reduction strategies such as increased outreach regarding water softeners/conditioners. The Recommendation Report is due by January 1, 2020.

Prepared by: Brett Dingman, Water Reclamation Manager

ATTACHMENTS:

SEPTEMBER 24, 2018

LAS VIRGENES MUNICIPAL WATER DISTRICT

Identification of Options Report

Prepared by:
LARRY WALKER ASSOCIATES

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1 Introduction

Tapia Water Reclamation Facility (WRF) is owned and operated by the Las Virgenes – Triunfo Joint Powers Authority (JPA), which consists of the Las Virgenes Municipal Water District (LVWMD) and Triunfo Sanitation District. The Tapia WRF discharges tertiary treated wastewater primarily to Malibu Creek (Discharge Point 001) and occasionally to the Los Angeles (LA) River (Discharge Point 005), under Order No. R4-2017-0124, NPDES No. CA0056014, issued by the Los Angeles Regional Water Quality Control Board (Regional Board) to LVMWD[1]. Tapia WRF discharges to Arroyo Calabasas, a tributary to the LA River when necessary to comply with a seasonal discharge prohibition for Malibu Creek from April 15th to November 15th. [2]

Order No. R4-2017-0124 revised the chloride effluent limitation for Tapia WRF discharge to the LA River from 190 mg/L to 150 mg/L. The Tapia WRF is not able to consistently comply with the new chloride effluent limit and, therefore, LVWMD requested a time schedule order (TSO). A TSO (Order No. R4-2017-0125) was issued by the Regional Board that contains interim limits and milestones to allow the Tapia WRF time to achieve consistent compliance.

The TSO requires specific actions to identify and evaluate effluent chloride sources and identify options to reduce chloride sources or regulatory options to amend the new effluent limitation, which may include a Site-Specific Objective, a Basin Plan Amendment, and/or a discharge specific variance. The TSO establishes a schedule to comply with or recommend regulatory actions to address Tapia WRF's ability to comply with the effluent limitation of 150 mg/L, during which time, Tapia WRF will be subject to an interim effluent limitation of 190 mg/L.

The first requirement and milestone in the TSO was to investigate chloride sources and submit a Chloride Source Investigation Report, which was submitted as required to the Regional Board on March 29, 2018. The Chloride Source Investigation Report quantified sources of chloride in Tapia WRF's effluent. The second requirement and milestone in the TSO was to evaluate data from the Chloride Source Investigation Report and impacts on chloride levels in the final effluent. The Chloride Evaluation of Options Report was submitted to the Regional Board on August 30, 2018.

The third requirement and milestone in the TSO, Identification of Options Report, is due to the Regional Board on January 1, 2020. The purpose of this report is to meet this requirement and use the information from the first two reports to identify potential implementation and regulatory options for meeting or adjusting the chloride effluent limitations. **Table 1-1** lists the required elements of the Identification of Options Report and the sections within this report addressing each element.

[1] LVMWD is the Permittee under Order No. R4-2017-0124 though Tapia WRF is jointly owned/operated by the JPA.

[2] Tapia WRF is subject to flow augmentation requirements from the National Marine Fisheries Service (NMFS) in Malibu Creek. Discharges to Malibu Creek to sustain required flows are exempt from the discharge prohibition.

Table 1-1. TSO (Order No. R4-2017-0125) Requirements and Schedule

Requirement	Section/Report
1. Identify chloride levels in source waters delivered to residents in LVMWD's service area from 1999-present. The composition of the various sources of water delivered to the service area shall be described, including but not limited to water from the State Water Project (SWP), Colorado River Aqueduct, Los Angeles Department of Water and Power, and Las Virgenes Reservoir.	**Chloride Source Investigation Report**
2. Evaluate data from the Chloride Source Investigation Report and impacts on chloride levels in the final effluent.	**Chloride Evaluation of Options Report**
3. Evaluate beneficial uses of the receiving water downstream of Discharge Point 005, the frequency of the discharge, characterization of discharge location and flow path, and the impact the discharge may have on the receiving water.	**Chloride Evaluation of Options Report**
4. Evaluate potential source reduction activities that the Permittee can feasibly implement to reduce chloride in the influent and effluent, including timeframes for each activity.	**Chloride Evaluation of Options Report**
5. Evaluate the effect of drought on chloride levels in source and influent water and substantiate whether or not the findings in 97-02 are applicable to Tapia WRF's discharge.	**Chloride Evaluation of Options Report**
6. Propose possible source reduction activities including, but not limited to, public outreach, chloride dose optimization, and the impact and feasibility of installing an ultraviolet light disinfection system.	**Section 4 of this Report**
7. Propose solutions to the Regional Water Board that may include utilizing the Chloride Source Investigation and Evaluation Reports, development of a Site-Specific Objective, a Basin Plan Amendment, and/or a discharge-specific variance for consideration by the Regional Water Board.	**Section 5 of this Report**

2 Summary of the Chloride Source Investigation Report

The TSO requires that LVMWD propose possible source reduction activities and other solutions to the Regional Water Board utilizing the Chloride Source Investigation and Evaluation Reports. This section provides a summary of the Investigation Report followed in the next section by a summary of the Evaluation Report.

The Chloride Source Investigation Report quantified the relative contributions of sources to chloride levels in the effluent. **Table 2-1** and **Figure 2-1** show a summary of estimated loads from sources of chloride in Tapia WRF effluent for the period from June through December 2017.

As shown below, the monthly average influent chloride concentration during the period from June through December 2017 was 148 mg/L. Using the monthly average influent flow during that period, 7.6 MGD, the average influent chloride load was 9,400 lbs/day. Over the same period, the average effluent load was 10,600 lbs/day, based on an average monthly effluent concentration of 164 mg/L and an average monthly effluent flow of 7.8 MGD.

Table 2-1. Summary of Estimated Chloride Loads to Tapia WRF, June-December 2017

Source	Estimated Load	% Contribution to Effluent Load
Influent sources	**9,400 lbs/day**	**89%**
Water supply	4,900 lbs/day	46%
Industrial sources	48 lbs/day	1%
Residential water softeners	2,300 lbs/day	22%
Residential uses	1,700 lbs/day	16%
Commercial uses	230 lbs/day	2%
Unidentified influent sources	220 lbs/day	2%
In-plant sources	**1,200 lbs/day**	**11%**
Sodium hypochlorite	1,200 lbs/day	11%
Average Effluent Load, June-December 2017	**10,600 lbs/day**	

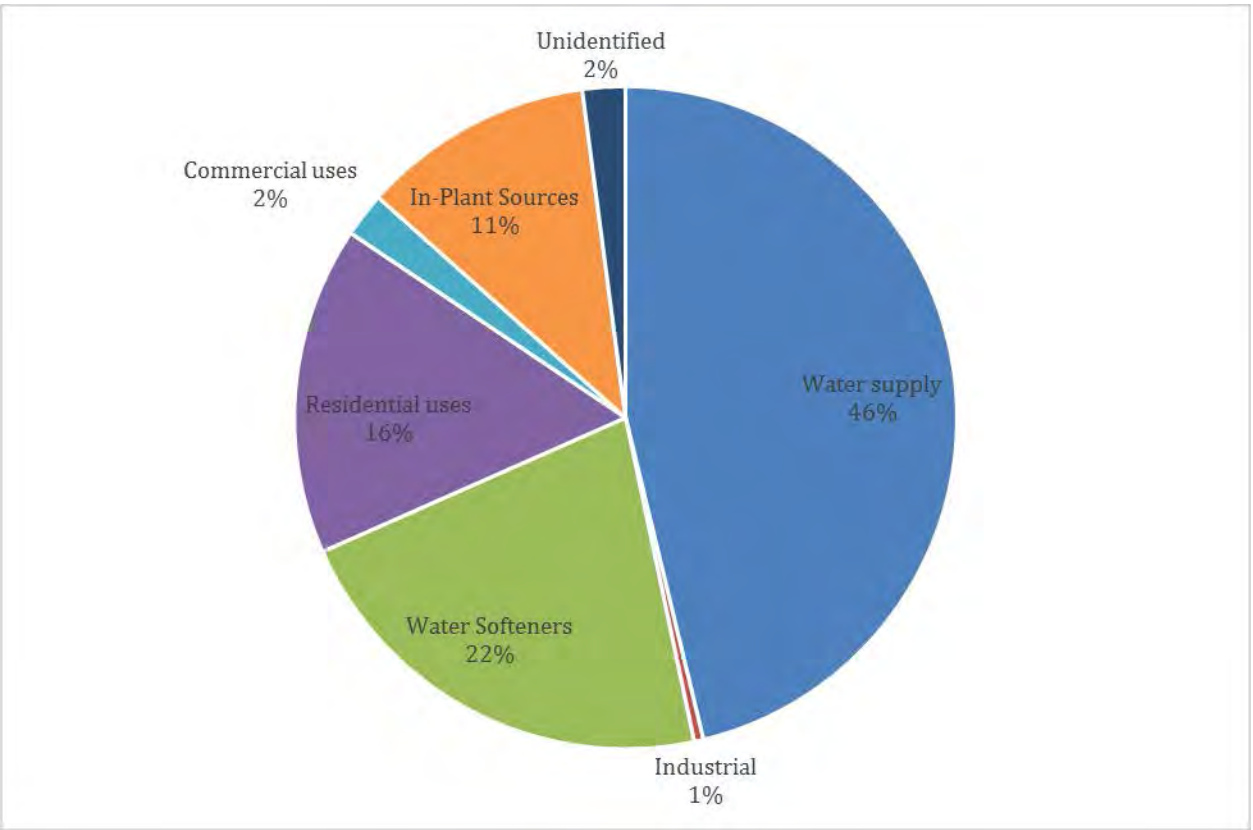

Figure 2-1. Summary of Estimated Chloride Loads to Tapia WRF, June-December 2017

The water supply accounts for almost half the total chloride load, followed by residential water softeners accounting for over one-fifth of the total load. Of the other sources evaluated, over one-third of the total chloride load originates from residential uses or in-plant sources. Commercial and industrial uses together comprise a very small portion (3%) of the total chloride load. All identified load sources make up 98% of the total effluent load. One potential source which may contribute to the remaining 2% of effluent chloride loading is collection system inflow and infiltration from groundwater. However, data is not currently available to estimate contributions from inflow and infiltration. The difference between identified source loads and total influent load may also be related to uncertainties and data variability associated with the estimated source analysis.

3 Summary of the Chloride Evaluation of Options Report

Tapia WRF primarily discharges to Malibu Creek at discharge point EFF-001. Evaluation of 2004 to 2017 data shows the total annual volumes discharged to the LA River (Discharge Point EFF-005) are on average about 8% of the total annual volumes discharged to Malibu Creek (EFF-001). The TSO required that LVMWD "Evaluate beneficial uses of the receiving water downstream of Discharge Point 005, the frequency of the discharge, characterization of discharge location and flow path, and the impact the discharge may have on the receiving water." This section provides a summary of the Chloride Evaluation of Options report.

3.1 RECEIVING WATER BENEFICIAL USES

As outlined in multiple chloride TMDLs in the Los Angeles Region, the agricultural (AGR) beneficial use has been determined to be the most sensitive to chloride concentrations.[3,4,5] The concentrations impacting aquatic life beneficial uses are higher than those generally needed to protect agricultural beneficial uses, particularly if salt sensitive agriculture (avocados, citrus, and strawberries) are present.

Based on a review of the Basin Plan designated beneficial uses, there are no existing or potential agricultural beneficial uses in any portion of the LA River. Arroyo Calabasas, the tributary of the Los Angeles River to which Tapia discharges, has no existing beneficial uses defined in the Basin Plan. However, there are potential beneficial uses of municipal and domestic water supply, and habitat for warm freshwater aquatic life and wildlife designated for Arroyo Calabasas. Existing beneficial uses in Reach 6 of the LA River, the reach to which Arroyo Calabasas discharges, include habitat for freshwater aquatic life, wildlife and wetland habitat, as well as groundwater recharge. Municipal and domestic water supply, and industrial service supply are potential beneficial uses in Reach 6.

With no existing or potential agricultural beneficial uses in Arroyo Calabasas or downstream reaches of the Los Angeles River, chloride water quality objectives set at levels necessary to protect those more sensitive beneficial uses are not needed. Therefore, water quality objectives necessary to protect the other designated beneficial uses can be considered.

Order No. 97-02 set objectives for several downstream reaches of the main stem of LA River, as well as Burbank Western Channel, at 190 mg/L, and stated that they are expected to be "fully protective of drinking water and freshwater aquatic life". There are no existing or potential beneficial uses in Arroyo Calabasas or Reach 6 of the LA River that are not also beneficial uses

[3] Larry Walker Associates, 2007. Calleguas Creek Watershed Boron, Chloride, TDS, and Sulfate TMDL. Public Review Technical Report. April 2007.

[4] California Water Boards Los Angeles Region, 2007, Proposed Amendment to the Water Quality Control Plan – Los Angeles Region to Incorporate the Total Maximum Daily Load for Boron, Chloride, Sulfate, and TDS (Salts) in the Calleguas Creek Watershed, Attachment A to Resolution No. R4-2007-016.

[5] California Water Boards Los Angeles Region, 2014, Revision of the TMDL for Chloride in the Upper Santa Clara River, Attachment B to Resolution No. R4-2014-010.

of one or more of the downstream reaches given a chloride objective of 190 mg/L by Order No. 97-02. Therefore, 190 mg/L is also protective of beneficial uses in the receiving waters downstream of Tapia WRF's discharge to Arroyo Calabasas.

3.2 EVALUATION OF EFFECTS OF DROUGHT ON CHLORIDE LEVELS

Chloride concentrations in water supplied by the Metropolitan Water District of Southern California (MWD) typically increases during drought conditions, and this increase proportionally impacts Tapia WRF effluent chloride concentrations. Long term increases in chloride concentrations in the water supply and effluent reflect sustained changes in MWD source water composition, due to increasing salinity levels in the San Francisco Bay-Delta and increased reliance on deliveries from the Colorado River Aqueduct. Water conservation also impacts chloride concentrations entering Tapia WRF, as less water use results in lower dilution of chloride sources and higher concentrations. In addition to drought triggered water conservation, both statewide and local long-term water use reduction goals correlate to long term increases in chloride concentrations.

3.3 EVALUATION OF SOURCE REDUCTION ACTIVITIES

Among the identified key sources of chloride load to the Tapia WRF, only a few are controllable or partially controllable by actions from LVMWD. For example, chloride levels in the imported water supply as well as loads from residential uses are not controllable. Unidentified loads are also not controllable without further investigation to determine their specific source, or the degree to which the 2% contribution from unidentified loads can be attributed to uncertainty associated with the source identification analysis. **Figure 3-1** illustrates the controllability of chloride loads to Tapia WRF based on the load category and **Table 3-1** lists potential strategies or approaches to reduce chloride loads in each category.

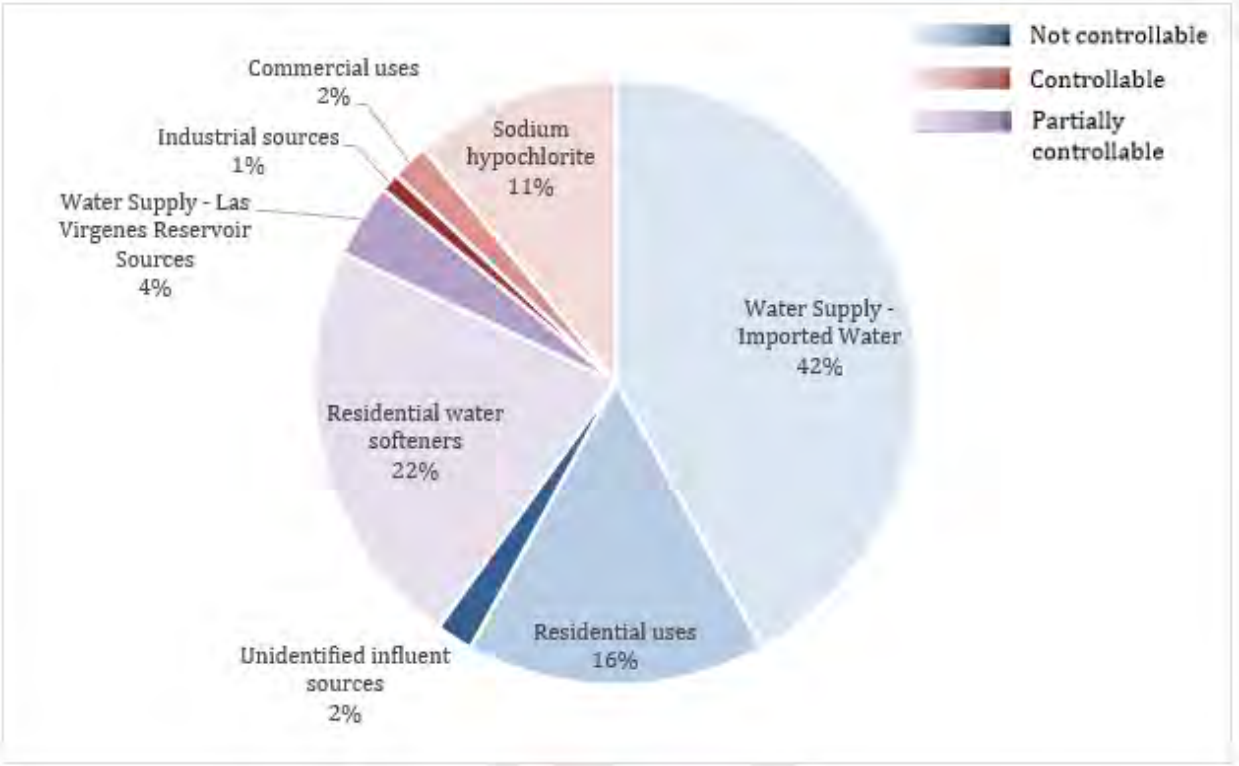

Figure 3-1. Controllability of Chloride Loads to Tapia WRF

Table 3-1. Controllability of Chloride Load Sources and Reduction Strategies

Source		% Contribution to Effluent Load	Controllability	Chloride Reduction Strategies/Approaches
Influent sources		***89%***		
Water supply	Imported Water	42%	Not controllable	N/A
	Las Virgenes Reservoir Sources	4%	Partially Controllable	1) Conversion to a non-chlorine primary disinfection system 2) Lining or covering the reservoir to reduce groundwater influence or evaporation
Industrial uses		1%	Controllable	1) Product substitution or reducing quantities of products used 2) Modification of equipment practices or processes, such as eliminating salt-based water softeners, maximizing reverse osmosis efficiency, minimizing pH adjustments, boiler blowdown and cleaning methods 3) Redirecting the waste stream for on-site reuse 4) Pretreatment, such as membrane treatment methods, or elimination of discharges by redirecting the waste stream
Residential water softeners		22%	Partially Controllable	1) Public outreach, education, and encouraging residents to voluntarily stop using water softeners or to switch to non-salt discharging alternatives 2) Rebates or other financial incentives for residents to remove self-regenerating water softeners 3) Ordinances banning or restricting residential self-regenerating water softeners
Residential uses		16%	Not controllable	N/A
Commercial uses		2%	Controllable	The same as industrial uses.
Unidentified influent sources		2%	Not controllable unless identified	N/A
In-plant sources		***11%***		
Sodium hypochlorite		11%	Controllable	1) Conversion to non-chlorine disinfection, such as ultra-violet (UV) disinfection

While water supply accounts for almost half the total chloride load, the majority of this load (92%) is not controllable due to limitations to controlling chloride load from the imported water. Significant reductions may also not be possible from water softener removal programs, since in this region, water is relatively soft and only 5% of households are estimated to have water softeners. Chloride generated from sodium hypochlorite use is technically a controllable in-plant source through conversion to non-chlorine disinfection, such as ultra-violet (UV) disinfection. However, UV disinfection is a very expensive practice and is not considered to be economically feasible. Among other controllable sources, commercial and industrial use as well as Las Virgenes Reservoir sources may be controllable, but only comprise a small portion of the total chloride load. Less than half (40%) of the chloride load has the potential to be controlled and the two largest sources (residential water softeners and in-plant sources) would require substantial funding and staff resources to address. Therefore, it is not expected that a significant reduction can be achieved without substantial time and expense.

4 Source Reduction Activities

The TSO requires that LVMWD propose "possible source reduction activities including, but not limited to, public outreach, chloride dose optimization, and the impact and feasibility of installing an ultraviolet light disinfection system."

4.1 CHLORIDE SOURCES

Main sources of chloride in the Tapia WRF effluent include: imported water, Las Virgenes Reservoir, residential water softeners, industrial and commercial uses, and in-plant application of sodium hypochlorite to the effluent. As noted in Section 3, only 40% of the chloride loading in Tapia WRF's effluent is controllable or partially controllable.

Tapia WRF's current average effluent concentration is 164 mg/L. As noted in Section 3, drought can influence chloride concentrations in the incoming water supply which is the largest source of chloride to Tapia and is also not a controllable source. In order to consistently meet an effluent limitation of 150 mg/L, the effluent concentrations must be reduced by at least 15 mg/L on average and any control measures must be able to provide additional loading reduction if water supply concentrations increase. In addition, increases in chloride influent loading due to ongoing water conservation have resulted in increased chloride concentrations and it is likely this trend will continue in the future. To obtain this loading reduction, a minimum of 905 lbs/day on average would need to be reduced. However, during the most recent drought, individual daily concentrations as high as 200 mg/L were observed in the effluent and increasing concentrations were observed due to higher concentrations in the water supply. Load reductions of 3232 lbs/day would be needed if monthly average concentrations were observed at this level. It is important to note that although only 8% of the flow is discharged to the Los Angeles River on average, there are no available strategies that can be applied to just reduce the loading in the flow to the Los Angeles River. As a result, the chloride load reduction strategies need to reduce all of the effluent flow to below 150 mg/L.

In order to achieve the needed chloride load reductions from the controllable sources, all of the in-plant chloride sources or approximately half of the residential water softener loading would need to be reduced to meet the average load reduction. Almost all the in-plant and residential water softener loading would need to be reduced if concentrations were to increase to the maximum observed concentrations. Reductions in the other controllable sources would not result in the needed reductions. As a result, based on the previous reports and the load reductions needed to meet the effluent limitations, the only source control options that will be further evaluated are the potential control strategies for in-plant sources and residential water softeners.

4.2 AVAILABLE STRATEGIES

As summarized in **Table 3-1**, currently available strategies to reduce chloride load in Tapia WRF effluent for the in-plant and self-regenerating water softeners include:

- Conversion to a non-chlorine primary disinfection system such as ultra-violet disinfection
- Public outreach, education, and encouraging residents to voluntarily stop using water softeners or to switch to non-salt discharging alternatives

- Rebates or other financial incentives for residents to remove self-regenerating water softeners
- Ordinances banning or restricting residential self-regenerating water softeners

4.3 TECHNICAL AND ECONOMIC FEASIBILITY OF AVAILABLE TECHNIQUES

Controlling in-plant chloride load sources can be fulfilled by conversion to UV disinfection, which requires planning, design, construction, testing, and regulatory approvals. This process is estimated to cost $18,000,000 to construct and $600,000 annually to operate and maintain, and the time required to convert from sodium hypochlorite to UV disinfection is projected to be 3.5 to 6 years. The UV treatment facility will also require significant yearly operations and maintenance expenses. The estimated load reduction from the conversion is 1200/lb/day.

Taking different actions to reduce salt loads from residential self-regenerating water softeners at Santa Clarita Valley Sanitation District and City of Dixon resulted in an average of 57% reduction. Assuming the same level of reduction in chloride load, such actions will result in a total load reduction of approximately 1,300 lb/day. However, residential self-regenerating water softeners are already prohibited in the service area and additional actions to reduce their use will be only partially effective based on the experiences of other municipalities.

Addressing in-plant sources would require a large capital investment and significant ongoing operations and maintenance costs and the loading reductions may not address future increases in chloride concentrations due to drought and water conservation, necessitating additional load reductions in the future. Some additional reductions could be obtained by reducing water softeners, however achieving the 50% reduction needed to meet the effluent limitations may be challenging. Self-regenerating water softeners are already banned in the service area and the estimated percentage of water softeners in the service area is already very low. Targeting outreach and education to change behavior in the estimated 5% of the households in the service area with water softeners is likely to involve significant effort to identify and remove the water softeners.

As noted in Section 3, the reaches to which Tapia discharges in the Los Angeles River Watershed do not have any existing or potential agricultural beneficial uses. The existing discharge concentration (164 mg/L on average) is less than the 190 mg/L water quality objective in the rest of the watershed that was found to be protective of the other designated beneficial uses in the watershed. As a result, the cost and effort needed to meet the 150 mg/L effluent limitation is significant and does not appear to be necessary to protect beneficial uses.

5 Potential Regulatory Solutions

The TSO requires that LVMWD propose "solutions to the Regional Water Board that may include utilizing the Chloride Source Investigation and Evaluation Reports, development of a Site-Specific Objective, a Basin Plan Amendment, and/or a discharge-specific variance for consideration by the Regional Water Board."

As noted in the Chloride Evaluation Report, there are no salt-sensitive beneficial uses in the reach to which Tapia discharges or the downstream reaches of the Los Angeles River. Additionally, an alternative water quality objective was adopted for other reaches of the watershed which includes documentation that provides an analysis of the other designated beneficial uses and the chloride concentration that would be protective of those beneficial uses. Therefore, regulatory solutions could be developed that would likely require less cost and effort than the source control strategies and still be protective of the Los Angeles River watershed beneficial uses. Potential regulatory solutions include options for modifying objectives, modifying effluent limitations through a variance and developing implementation provisions in the Basin Plan. The potential solutions that are applicable to Tapia include:

- Adopt site-specific objective of 190 mg/L. Site-specific objectives could be adopted based on the analysis conducted in Order 97-02. This would result in a consistent water quality objective throughout the Upper Los Angeles River Watershed.
- Adopt USEPA criteria for chloride in lieu of current objective. Because no agricultural beneficial uses are present in the Los Angeles River, the aquatic life and municipal drinking water beneficial uses are the beneficial uses for which the water quality objective needs to be established. As a result, the EPA criteria for protection of aquatic life could be utilized in lieu of the existing objectives through adoption into the Basin Plan. The USEPA criteria is 230 mg/L. This objective would be protective of the aquatic life and municipal drinking water beneficial uses because the secondary Maximum Contaminant Level (MCL) necessary to protect the municipal drinking water beneficial use is 250 mg/L.
- Develop a water quality standards variance. A water quality standards variance maintains the existing water quality objectives and beneficial uses, but allows for development of higher effluent limitations that represent the highest attainable condition of the waterbody. The variance cannot result in the lowering of currently attained ambient water quality and can only be developed if the conditions specified in 40 CFR 131.14 are met. Variances must be reevaluated every 5 years and are only applicable for the period of time specified in the variance. Variances were used to temporarily allow higher chloride effluent limitations for some wastewater treatment plants in Order 97-02.
- Implementation Basin Plan Amendment. As an alternative to developing a site-specific objective, the Basin Plan could be updated to include implementation provisions that allow higher discharge concentrations in permit limits, similar to the Drought Policy adopted by the Los Angeles Regional Water Quality Control Board in 1990, Order 90-004. Though this was a policy, not a Basin Plan Amendment, the implementation provisions of the Basin Plan could be modified based on a similar rationale to allow for effluent limitations based on incoming water supply concentrations.

Table 5-1 provides a summary of the potential options and relevant considerations for evaluating the options.

Table 5-1. Summary of Potential Regulatory Solutions

Regulatory Strategy	Result in Modifications to Effluent Limits that are Achievable?	Costs of Strategy as compared to implementation action costs	Protection of Designated Beneficial Uses?	Time Frame
Site Specific Objective of 190 mg/L	Yes	Low	Yes	<1 year if information from 97-XX can be used. Possibly additional time if new information needs to be developed
Adopt USEPA Criteria of 230 mg/L	Yes	Low, but higher than SSO of 190 mg/L	Yes	1 to 1.5 years because new information may need to be developed to demonstrate that the higher objective is protective of all beneficial uses
Variance	Yes, for the current permit term, but is subject to review and is not a permanent modification of the objectives	Lower than implementation, but higher than previous two options because requires Use Attainability type analysis	Yes	Minimum of 1 year, but could be longer. Requires development of significant new information to meet 40 CFR 131.14 requirements.
Implementation BPA	Possibly. This option does not have established precedents and is therefore more unclear as to how the process and results would be determined	Low because implementation provisions are easier to adopt than site-specific objectives, but costs are more uncertain because of the lack of precedents	Yes	Could be the quickest option, but more uncertain because of lack of precedents

6 Initial Recommendations

Based on the information in the previous two reports and the analysis of options provided in the previous sections, Tapia WRF is proposing to develop a site-specific objective of 190 mg/L based on the analysis and precedent in Order 97-02 and amend the Basin Plan to include this objective. The proposed approach is to align the Basin Plan objectives with the other chloride objectives in the Los Angeles River to reflect the beneficial uses that are present in the watershed. This will result in effluent limitations for Tapia that are aligned with other POTWs in the area for which the Basin Plan objective for the LA River was amended in Order 97-02, such as the Donald C. Tillman Water Reclamation Plant, Los Angeles-Glendale Water Reclamation Plant, and the City of Burbank Water Reclamation Plant[6].

6.1 DEVELOPMENT OF SITE-SPECIFIC OBJECTIVES

Development of a site-specific water quality objective must conform to State Resolution 68-16 and Federal Regulations covering antidegradation (40 CFR 131.12). It must not unreasonably affect beneficial uses or result in water quality lower than prescribed in applicable state or federal polices, must be necessary to accommodate important social or economic development and must have maximum benefits to the people of the State.

For chloride, the approach to developing site-specific objectives is based on assessing the beneficial uses in the waterbody and determining the chloride concentrations necessary to protect those beneficial uses, as discussed above. An antidegradation analysis will be conducted to ensure that the objectives determined to be protective of the beneficial uses meet State Resolution 68-16 and 40 CFR 131.12. Finally, the factors outlined in listed in Chapter 4, Article 3 of the Water Code (Porter-Cologne Act), as listed below, will be evaluated to determine the proposed site-specific objective.

- Reasonable protection of beneficial uses
- Past, present and probable future uses of water
- Environmental characteristics of the hydrographic unit under consideration
- Water quality conditions that could be achieved through the implementation of new chloride limits
- Economic considerations and analysis
- A thorough review of current technology and technology-based limits
- Comprehensive review of historical limits and compliance with these limits in the study reach
- An analysis of compliance and consistency with all federal, state, and regional plans and policies

[6] Regional Water Quality Control Board, Los Angeles Region, 1997. Resolution No. 97-02, Amendment to the Water Quality Control Plan to incorporate a Policy for Addressing Levels of Chloride in Discharges of Wastewaters.

These analyses will be compiled with the information on beneficial use protection to form the technical basis for a Basin Plan Amendment to modify the chloride objectives in Arroyo Calabasas and downstream reaches of the Los Angeles River if appropriate.

Information has been developed and assessed that address several of the factors listed above in the Chloride Source Investigation and Evaluation Reports prepared and have been submitted as required by the TSO. This information would provide the foundation for the analysis needed for the SSO development and may be expanded as necessary.

7 Summary

With water supply being the largest source of chloride in Tapia WRF's effluent, controllable or partially controllable sources are estimated to comprise only about 40% of Tapia WRF's effluent chloride load. The largest partially controllable source of the effluent chloride load is residential water softeners. The largest controllable source of the effluent chloride load is the sodium hypochlorite use for disinfection at Tapia WRF which could be replaced by conversion to UV disinfection. Other controllable or partially controllable load sources comprise a very small portion of the total chloride load.

In order to achieve the chloride load reductions from the controllable sources needed to meet the effluent limitations, all of the in-plant chloride sources or approximately half of the residential water softener loading would need to be reduced. Almost all the in-plant and residential water softener loading would need to be eliminated if average monthly concentrations increase to the maximum observed concentrations seen during the drought. Addressing in-plant sources would require a large capital investment and significant ongoing operations and maintenance costs. Additionally, the loading reductions may not be enough to cover potential future increases in chloride concentrations due to future drought conditions and water conservation, necessitating additional load reductions. Some additional reductions could be obtained by reducing water softeners, however achieving at least a 50% reduction in water softener loadings necessary to meet effluent limitations may be challenging. Self-regenerating water softeners are already banned in the service area and the estimated percentage of water softeners in the service area is already very low. Targeting outreach and education to change behavior in the estimated 5% of the households in the service area with water softeners is likely to involve significant effort and time.

The reaches to which Tapia discharges in the Los Angeles River Watershed do not have any existing or potential agricultural beneficial uses. With no existing or potential agricultural beneficial uses in Arroyo Calabasas or downstream reaches of the Los Angeles River, chloride water quality objectives set at 150 mg/L to protect the agricultural beneficial use is not needed. Based on the information in the previous two reports and the analysis of options provided in this report, Tapia WRF is proposing to develop a site-specific objective of 190 mg/L based on the analysis and precedent in Order 97-02 and amend the Basin Plan to include this objective. The proposed approach is to align the Basin Plan objectives with the other chloride objectives in the Los Angeles River to reflect the beneficial uses that are present in the watershed. The existing Tapia effluent concentration (164 mg/L on average) is less than the recommended site-specific objective of 190 mg/L. As a result, implementation of actions to meet the 150 mg/L effluent limitation is not recommended and does not appear to be necessary to protect beneficial uses.