



RANCHO MURIETA COMMUNITY SERVICES DISTRICT

15160 Jackson Road, Rancho Murieta, CA 95683
Office - 916-354-3700 * Fax - 916-354-2082

IMPROVEMENTS COMMITTEE (Directors Randy Jenco and Martin Pohll)

Regular Meeting
November 7, 2023 at 8:00 a.m.

All persons present at District meetings will place their cellular devices in silent and/or vibrate mode (no ringing of any kind). During meetings, these devices will be used only for emergency purposes and, if used, the party called/calling will exit the meeting room for conversation. Other electronic and internet enabled devices are to be used in the "silent" mode. Under no circumstances will recording devices or problems associated with them be permitted to interrupt or delay District meetings.

AGENDA

1. **Call to Order**
2. **Improvements Staff Report**
 - A. *Discussion Item* **Integrated Water Master Plan Townhall**
 - B. *Discussion Item* **Cal Poly SLO Student Project**
 - C. *Discussion Item* **Water Plant Membranes**
 - D. *Discussion Item* **SB170 Project Update**
3. **Comments from the Public**

If you wish to speak during Comments from the Public or would like to comment regarding an item appearing on the meeting agenda, please complete a public comment card and submit to the Board Secretary prior to Public Comments. We will hold all comments to the Public Comment section.
4. **Director and Staff Comments/Suggestions**
5. **Adjournment**

"In accordance with California Government Code Section 54957.5, any writing or document that is a public record, relates to an open session agenda item and is distributed less than 24 hours prior to a special meeting, will be made available for public inspection in the District offices during normal business hours. If, however, the document is not distributed until the regular meeting to which it relates, then the document or writing will be made available to the public at the location of the meeting."

In compliance with the Americans with Disabilities Act if you are an individual with a disability and you need a disability-related modification or accommodation to participate in this meeting or need assistance to participate in this teleconference meeting, please contact the District Office at 916-354-3700 or awilder@rmcsd.com. Requests must be made as soon as possible.

Note: This agenda is posted pursuant to the provisions of the Government Code commencing at Section 54950. The date of this posting is November 3, 2023. Posting locations are: 1) District Office; 2) Post Office; 3) Rancho Murieta Association; 4) Murieta Village Association.

Improvements Committee Staff Report

Date: November 7, 2023
To: Improvements Committee
From: Michael Fritschi, P.E. - Director of Operations

A. Integrated Water Master Plan Townhall – A brief synapse will be provided to the committee of the Townhall held on November 2.

B. Cal POLY SLO Student Project

The District and California Polytechnic State University San Luis Obispo have discussed utilizing the water treatment facility for the undergrad student culminating design project. As the “client”, the District will present the students with an RFP for facility planning and 30% design services for the following consulting services:

- a) solidify existing water production capacity
- b) determine the best way forward to increase capacity
- c) process reconfiguration suggestions for increased efficiency

Students will provide proposals in January and complete projects by second quarter. The District will present the problem statement, provide answers to requests for information, and will review the finished projects.

This is an excellent opportunity for the District to provide a learning opportunity for future Engineers and to receive valuable preliminary plant analysis and design information that can form the foundation of future plant studies to ensure adequate existing and future plant capacity.

C. Water Plant Membranes

The District currently has in operation, 3 trains of membranes in Plant 1. Each train has 2 cassettes, each cassette holds a total of 87 modules. Membranes have an average lifecycle of 7-10 years. The current membranes were placed in operation in 2015 and are roughly 8 years old on average. Many membranes have been stained by manganese and are not repairable. In July of this year, the District ordered 15 replacement modules and replaced 5 initially. Over the past 4 months an additional 6 modules needed replacing due

to failure. Currently operations staff need to replace 6 additional modules and they have 4 new modules available.

Staff can order 5 modules at a **per module cost** of **\$2,537.40** or order 15 modules at a **per module cost** of **\$1,910.96**. Staff propose to order 15 modules at a per module approximate cost of \$1,910.96 for an estimated total of \$28,664.

While staff have learned to minimize exposure of membranes to manganese, most membranes are nearing the end of their useful life. Staff maintains a membrane “map” that tracks the performance and failures of membranes on a module basis. Staff propose that based on the age and wear pattern of the membranes, that the District consider budgeting to replace a cassette every other year for the next 12 years. This cost is being researched. The (likely) lower per module shipping cost and the optimal utilization of existing membranes make the cassette purchase option more affordable and efficient than continuing to replace membranes as they fail on a per module basis.

D. SB170 Project Update

1. **Granlees Forebay Safety Improvements** – this project is at the 90% design level and in process of finalizing intake gate guard design.
2. **Water Facility Chlorine Gas to NaOCl Improvements** – Design is at 100% and the electrical portion is being reviewed by the District electrician.
3. **Wastewater Facility Chlorine Gas to NaOCl and Contact Tank Improvements.** – The project alternatives capital cost analysis was updated for the various NaOCl upgrade alternatives, including the UV disinfection comparison. The capital cost opinions range from \$3.175 M NaOCl upgrade to rehab the existing contact tank and add an extension to the existing tank to get full 3.0 mgd capacity to a \$4.490 M UV upgrade which includes NaOCl pre-DAF treatment. If the pre-DAF NaOCl treatment is deemed unnecessary, then the UV alternative is competitive with the other four alternatives. The District has requested lifecycle cost analysis for the alternatives and a meeting to discuss a recommendation to the Improvement committee for moving forward with a design of the best alternative (see Attachment A for more information).

Attachment A

**RANCHO MURIETA COMMUNITY SERVICES DISTRICT
WASTEWATER TREATMENT FACILITY – SODIUM HYPOCHLORITE SYSTEM/
CHLORINE CONTACT BASIN IMPROVEMENTS
SUMMARY OF PROJECT ALTERNATIVES
DISINFECTION SYSTEM CAPACITY 3.0 MGD
November 1, 2023**

Description of Alternative	Construction Budget, \$M
Project Alternative 1	
Rehabilitate existing CCB ^a	0.325
Replace existing CCP ^b with 24-inch CCP	1.900
Sodium hypochlorite system improvements	1.050
TOTAL	3.275
Project Alternative 2	
Demolish and reconstruct CCB	0.670
Replace existing CCP with 24-inch CCP	1.900
Sodium hypochlorite system improvements	1.050
TOTAL	3.620
Project Alternative 3	
Construct CCB to meet volume required for 3.0 mgd tertiary treatment facility	2.500
Sodium hypochlorite system improvements	1.050
TOTAL	3.550
Project Alternative 4	
Rehabilitate existing CCB	0.325
Expand existing CCB to meet volume required for 3.0 mgd tertiary treatment facility	1.800
Sodium hypochlorite system improvements	1.050
TOTAL	3.175
Project Alternative 5	
Rehabilitate existing CCB	0.150 ^c *
Convert existing CCB to UV reactor	3.400 ^d **
Sodium hypochlorite system improvements	0.940 ^e ***
TOTAL	4.490 →

5
3.55 M
if remove
NaOCl pre-treatment

^a CCB = chlorine contact basin

^b CCP = chlorine contact pipe

* ^c Rehabilitation work limited to repairs recommended based on condition assessment

** ^d Costs escalated to October 2023 dollars, UV equipment sized for 3.0 mgd

*** ^e Conversion to sodium hypochlorite from gaseous chlorine to support continuing dosing upstream of DAF

Michael Fritschi

From: Michael Fritschi
Sent: Wednesday, November 1, 2023 11:56 AM
To: Richard, Dave
Cc: Travis Bohannon; Henricksen, Jan; Tran, KT Khuong
Subject: RE: Sodium Hypochlorite System/Chlorine Contact Basin Improvements Summary of Project Alternatives

Dave,
Thank you, these look great.

1. I am curious to the scale of hypochlorination required to provide DAF operations. In **theory** one would not need chlorine to make a DAF work, that maybe that pre-chlor is oxidizing ammonia?

I guess what you are saying is unless we can figure out how to operate the DAF without all of that pre-chlor, the \$0.94 M is needed for pre-chlor. I get that.

2. The \$0.94 M question is do we really need the pre-chlor? If not, the UV option is cost competitive. We should as a group discuss this in more detail before we move forward.
3. Can we prepare a high level lifecycle comparison taking into account replacement lamps and kwh vs NaOCl system lifecycle?
4. If we do not use pre-chlor for UV: I envision that in the future we would need to do small tote based hypochlorination to serve the homeowners and commercial businesses with a small carrier residual. The golf course doesn't need a residual, but homes and businesses likely would. If that is the case, and we are not oxidizing ammonia, are chloramines acceptable for re-use applications?

I propose that we set up a good decision making meeting so that I can bring that decision to our improvements committee. Once we get buy in from improvements we can march forward with design. What timing may work with you to meet with Travis, myself and Martin Pohl?

Michael T. Fritschi, P.E.

Director of Operations
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