ARCH CAPE SANITARY DISTRICT

BOARD OF DIRECTORS MEETING

Arch Cape Fire Hall 79729 Hwy 101

Thursday March 16, 2023

To Join Meeting by Video Link:

https://us02web.zoom.us/j/82450898403

Join by Telephone: 1-669-900-6833

Meeting ID: 824 5089 8403

I. Call to Order	Darr Tindall, President
II. Public Comments	Darr
III. Agenda Approval	Darr
IV. Consent Agenda (Action)	Darr
A. Approve Minutes – February 16th Regular Meeting	
B. Accept February Budget and Finance Reports	
C. Authorize Payment of Accounts	
D. Accept Correspondence Requiring No Action	
V. Old Business	
A. Webb Lift Station Grant (Information)	Curt Mcleod
B. Board position vacancies	Darr
C. Budget process updates	Teri / Matt
VI. New Business	
A. Facilities plan update	Curt Mcleod / Matt
B. Appointment of new Budget Committee Members	Darr
VII. Reports (Information)	
A. Accounts Receivable Report	Teri Fladstol, Jigsaw Consulting
B. Staff Report and Correspondence for Action	Matt Gardner, Plant Operator
C. Board Members' Comments and Reports	Darr
VIII. April Agenda Items (Information)	Darr
IX. Public Comments	Darr
XI Adjourn	Darr

ARCH CAPE SANITARY DISTRICT BVA FY 2022/2023

GENERAL FUND	Budget	Jul 22	Aug 22	Sep 22	Oct 22	22-Nov	31-Dec	31-Jan	28-Feb	Year to Date	%
Beginning Balance	$ 154,726.00										
· WD Facilities Use Charges	$ 3,750.00									$ -	0.0%
4300 · Interest Income	$ 4,000.00								$ 0.40	$ 0.40	0.01%
· T.A.G. Facility Plan Update	$ 7,400.00				$ 5,400.00					$ 5,400.00	72.97%
4601 · User Fees	$ 328,008.00	$ 15,710.88	$ 8,430.00	$ 31,887.89	$ 19,831.94	$ 11,973.13	$ 10,428.61	$ 41,757.63	$ 19,456.83	$ 159,476.91	48.62%
4604 · Excess Usage Charges	$ 15,000.00	$ 307.27	$ 79.53	$ 1,230.79	$ 384.42	$ 388.91	$ 1,074.30	$ 4,734.61	$ 1,159.40	$ 9,359.23	62.39%
4605 · Debt Service	$ 37,368.00	$ 2,218.00	$ 1,326.00	$ 3,544.52	$ 1,862.25	$ 1,291.00	$ 119.64	$ 4,973.59	$ 1,942.12	$ 17,277.12	46.24%
Total Income	$ 395,526.00	$ 18,236.15	$ 9,835.53	$ 36,663.20	$ 27,478.61	$ 13,653.04	$ 11,622.55	$ 51,465.83	$ 22,558.75	$ 191,513.66	48.42%
Total Resources:	$ 550,252.00	$ 18,236.15	$ 9,835.53	$ 36,663.20	$ 27,478.61	$ 13,653.04	$ 11,622.55	$ 51,465.83	$ 22,558.75	$ 191,513.66	34.8%
· Water District IGA Charges	$ 150,000.00	$ 8,142.13	$ 8,250.20	$ 7,198.05	$ 9,398.43	$ 10,634.05	$ 9,398.43	$ 18,095.01		$ 71,116.30	47.41%
6103 · Liability & Property Insurance	$ 14,850.00	$ 2,228.00							$ 13,881.00	$ 16,109.00	108.48%
6104 · Licenses	$ 3,500.00									$ -	0.0%
6105 · Dues & Taxes	$ 1,200.00	$ 8.25	$ 8.25	$ 3,106.25	$ 1,029.21	$ 8.25	$ 8.25	$ 8.25	$ 8.25	$ 4,184.96	348.75%
6106 · Professional Services	$ 5,000.00				$ 495.00	$ 82.50	$ 139.40	$ 2,667.50	$ 2,855.00	$ 6,239.40	124.79%
6107 · Auditing Service	$ 10,000.00									$ -	0.0%
6108 · Legal Services	$ 5,000.00									$ -	0.0%
6109 · Notices	$ 700.00									$ -	0.0%
6110 · Utilities	$ 46,000.00	$ 3,458.34	$ 3,014.77	$ 2,504.06	$ 2,396.12	$ 2,593.03	$ 3,507.31	$ 3,572.75	$ 315.74	$ 21,362.12	46.44%
6200 · Maintenance	$ 100,000.00	$ 323.76	$ 4,258.57	$ 5,716.56	$ 3,007.51	$ 5,316.35	$ 14,091.95	$ 626.42	$ 4,101.87	$ 37,442.99	37.44%
6201 · Chemicals	$ 7,000.00	$ 921.88		$ 1,106.25	$ 3,887.86		$ 750.00	$ 1,125.00		$ 7,790.99	111.3%
· Inflow & Infiltration	$ 1,000.00									$ -	
Total 6000 · Materials & Services	$ 344,250.00	$ 15,082.36	$ 15,531.79	$ 19,631.17	$ 20,214.13	$ 18,634.18	$ 27,895.34	$ 26,094.93	$ 21,161.86	$ 164,245.76	47.71%
Total Operating Expenses	$ 344,250.00	$ 15,082.36	$ 15,531.79	$ 19,631.17	$ 20,214.13	$ 18,634.18	$ 27,895.34	$ 26,094.93	$ 21,161.86	$ 164,245.76	47.71%
Grant Expenditures											
T.A.G. Facility Plan Upgrade	$ 7,400.00		$ 2,000.00		$ 5,400.00					$ 7,400.00	100.0%
Total Grant Expendistures	$ 7,400.00	$ -	$ 2,000.00	$ -	$ 5,400.00	$ -	$ -	$ -	$ -	$ 7,400.00	100.0%
7500 · Debt Service											
QDEQ - Irrigation Site Loan	$ 7,753.00	$ -	$ -	$ -	$ -					$ -	0.0%
OECD - Facility Engineering Loan	$ 19,319.00	$ -	$ -	$ -	$ -	$ 19,319.09				$ 19,319.09	0.0%
IFA Loan/Grant - Facility Improvement	$ 19,383.00	$ -	$ -	$ -	$ -	$ 19,383.23				$ 19,383.23	0.0%
Total 7500 · Debt Service	$ 46,455.00	$ -	$ -	$ -	$ -	$ 38,702.32				$ 38,702.32	0.0%
TOTAL GENERAL FUND EXPENDITURES	$ 398,105.00	$ 15,082.36	$ 17,531.79	$ 19,631.17	$ 25,614.13	$ 57,336.50	$ 27,895.34	$ 26,094.93	$ 21,161.86	$ 189,186.22	47.52%
CONTINGENCY & ENDING BALANCES											
Contingency: Irrigation Site Loan Reserve	$ 7,753.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Contingency: USDA Loan Reserve	$ 6,923.00	$ -								$ -	
8002 · Operating Reserve	$ 63,697.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
8003 · Undesignated	$ 14,058.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
CONTINGENCY & ENDING BALANCES	$ 92,431.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	

ARCH CAPE SANITARY DISTRICT BVA FY 2022/2023

CAPITAL FUND	Budget	Jul 22	Aug 22	Sep 22	Oct 22	22-Nov	31-Dec	31-Jan	28-Feb	Year to Date	%
Beginning Balance	$ 107,414.00										
4550 · SDC Revenue	$ 19,124.00	$ -	$ 19,124.00	$ 9,562.00	$ -	$ -	$ -	$ 19,124.00	$ -	$ 47,810.00	250.0%
4900 · Transfer from General Fund		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Total Income	$ 19,124.00	$ -	$ 19,124.00	$ 9,562.00	$ -	$ -	$ -	$ 19,124.00	$ -	$ 47,810.00	250.0%
Total Resources:	$ 126,538.00										
Capital Outlay		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Total 7000 · Capital Outlay	$ -										
8000 · Contingency	$ 126,538.00									$ -	
CONTINGENCY & ENDING BALANCES	$ 126,538.00										

SD GO BOND DEBT FUND	Budget	Jul 22	Aug 22	Sep 22	Oct 22	22-Nov	31-Dec	31-Jan	28-Feb	Year to Date	%
Beginning Balance	$ 1,073.00									$ -	
Bond Proceeds	$ 144,600.00	$ -	$ -	$ -	$ -	$ -	$ -			$ -	0.0%
Total Income	$ 144,600.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Total Resources:	$ 145,673.00		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Capital Outlay										$ -	
USDA Plant Upgrade Payments	$ 144,600.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 144,600.00	$ -	$ 144,600.00	0.0%
Total 7000 · Capital Outlay	$ 144,600.00							$ 144,600.00	$ -	$ 144,600.00	
Unappropriated Balance	$ 1,073.00					$ -	$ -	$ -	$ -	$ -	
CONTINGENCY & ENDING BALANCES	$ 145,673.00										

Arch Cape Sanitary District

Balance Sheet

February 28, 2023

ASSETS		
Checking/Savings		
1000 · Columbia Bank #1218	$	47,178.73
1100 · Local Government Pool	$	366,746.44
Total Checking/Savings	$	413,925.17
Total Current Assets	$	413,925.17
TOTAL ASSETS	**$**	**413,925.17**
LIABILITIES & EQUITY		
Liabilities		
Current Liabilities	$	7,753.00
Total Liabilities	$	7,753.00
Equity	$	406,172.17
TOTAL LIABILITIES & EQUITY	**$**	**413,925.17**

Arch Cape Sanitary District
Check Detail
February 2023

Type	Num	Date	Name	Item	Account	Paid Amount	Original Amount
Check	**EFT**	**02/01/2023**	**Columbia Bank**		**1000 · Columbia B...**		**-1,050.26**
					4605 · Debt Service	-128.00	128.00
					4600 · Sanitary Use...	-921.00	921.00
					4604 · Overage/Exc...	-1.26	1.26
TOTAL						-1,050.26	1,050.26
Check	**EFT**	**02/01/2023**	**Spectrum Business**		**1000 · Columbia B...**		**-259.96**
					6110 · Utilities	-259.96	259.96
TOTAL						-259.96	259.96
Check	**EFT**	**02/15/2023**	**Columbia Bank**		**1000 · Columbia B...**		**-55.02**
					6100 · Bank Service...	-55.02	55.02
TOTAL						-55.02	55.02
Check	**EFT**	**02/22/2023**	**Microsoft**		**1000 · Columbia B...**		**-8.25**
					6105 · Dues & Taxes	-8.25	8.25
TOTAL						-8.25	8.25
Check	**EFT**	**02/22/2023**	**Google**		**1000 · Columbia B...**		**-1.99**
					6200 · Maintenance	-1.99	1.99
TOTAL						-1.99	1.99
Check	**8654**	**02/09/2023**	**North Central Lab**		**1000 · Columbia B...**		**-222.23**
					6200 · Maintenance	-222.23	222.23
TOTAL						-222.23	222.23
Check	**8655**	**02/09/2023**	**Recology Western ...**		**1000 · Columbia B...**		**-55.78**
					6110 · Utilities	-55.78	55.78
TOTAL						-55.78	55.78
Check	**8657**	**02/16/2023**	**Eds Septic**		**1000 · Columbia B...**		**-2,975.00**
					6200 · Maintenance	-2,975.00	2,975.00
TOTAL						-2,975.00	2,975.00
Check	**8658**	**02/16/2023**	**Curran McLeod**		**1000 · Columbia B...**		**-2,855.00**
					6106 · Professional ...	-2,855.00	2,855.00
TOTAL						-2,855.00	2,855.00

Arch Cape Sanitary District
Check Detail
February 2023

Type	Num	Date	Name	Item	Account	Paid Amount	Original Amount
Check	**8659**	**02/16/2023**	**SDIS**		**1000 · Columbia B...**		**-13,881.00**
					6103 · Liability & Pr...	-13,881.00	13,881.00
TOTAL						-13,881.00	13,881.00
Check	**8660**	**02/16/2023**	**Backflow Valve Se...**		**1000 · Columbia B...**		**-148.00**
					6200 · Maintenance	-148.00	148.00
TOTAL						-148.00	148.00
Check	**8661**	**02/16/2023**	**North Central Lab**		**1000 · Columbia B...**		**-222.23**
					6200 · Maintenance	-222.23	222.23
TOTAL						-222.23	222.23
Check	**8662**	**02/16/2023**	**Jackson Oil**		**1000 · Columbia B...**		**-477.40**
					6200 · Maintenance	-477.40	477.40
TOTAL						-477.40	477.40

Arch Cape Water and Sanitary Districts
32065 East Shingle Mill Lane
Arch Cape, OR 97102 • 503.436.2790

Arch Cape Domestic Water Supply District / Arch Cape Sanitary District Budget Committee
APPLICATION

Date: 3/2/23

Applicant Name: Thomas Mattia

Mailing Address: PO Box 700, Tolovana Park, OR 97145

Residence Address: 32088 Buena Vista Dr, Arch Cape, OR 97102

Contact Telephone: 404-433-3524
Email: tommattia@me.com

District Budget Committee Wishing to Serve On:

Water District Budget Committee: X Sanitary District Budget Committee:
Both: X

Describe your background (relevant experience, education, training, etc.)

I am a retired corporate executive with extensive budgeting experience (SVP of The Coca-Cola Company, VP of EDS, Chairman of Edelman China) and I am happy to serve my new adopted community.

Describe your interest in serving on the Arch Cape Budget Committee(s):
I am interested in serving my newly adopted community and I have a strong interest in preserving our forest and our water supply.

Arch Cape Water and Sanitary Districts
32065 East Shingle Mill Lane
Arch Cape, OR 97102 • 503.436.2790

Arch Cape Domestic Water Supply District / Arch Cape Sanitary District Budget Committee
APPLICATION

Date : March 4, 2023

Applicant Name: Mike Wodtke

Mailing Address: 1921 Bayard Avenue, Saint Paul, MN 55116

Residence Address: 79878 US Highway 101, Arch Cape, OR 97102

Contact Telephone: 612-345-1065

Email: mikewodtke@gmail.com

District Budget Committee Wishing to Serve On:

Water District Budget Committee: Yes
Sanitary District Budget Committee: Yes
Both: Yes, I would be willing to serve on both Committees

Describe your background (relevant experience, education, training, etc.):
For the past 15 years I have had P&L (financial) ownership of two large retail business units. In my current role as Vice President Ecommerce & Technology at Blu Dot – a modern furniture designer and retailer - I am responsible for all sales, costs and financing decisions of a $50MM/yr ecommerce channel, a $10MM/yr marketing budget and a $5MM/yr technology capital expense budget. Having to manage the financial variability in the good times pre-Covid, supply-chain challenged and high furniture sales growth period during Covid and the

weakening macro-economic condition in the current period, I have experience navigating multiple financial scenarios. Additionally, I serve with our CFO as a key player in our multi-year financial planning efforts.

I hold a BS in Business from Minnesota State University.

Describe your interest in serving on the Arch Cape Budget Committee(s):
My wife Lisa and I bought our home in Arch Cape in the summer of 2021 after vacationing to the Oregon Coast annually for over a decade. Earlier in 2021, we spent a trip looking at possible places to target and we got lucky enough when the Churches put their stunning property on the market. Since then, we have spent 2 months a year on the coast while doing some doing some short-term rentals on it. Ultimately, we will retire there when our girls, Palmer (10) and Dylan (8), are out of the house. As our time spent in Arch Cape has grown, I have fallen in love with the area. This includes many excursions into the Arch Cape forest via Hug Point Road where I start most of my trail runs in the area. I am constantly in awe of not only the beautiful land we are privileged to spend time on, but also because it helps locally sustain us. Heck, I've even made a wrong turn and found myself turned around and chatting with the Water District team for 30minutes about the area.

I understand this is a remote opportunity - which is great - but am open to traveling, if needed, for meetings. I am interested not just now, but for years to come.

Thank you for your consideration.

Arch Cape Water and Sanitary Districts
32065 East Shingle Mill Lane
Arch Cape, OR 97102 • 503.436.2790

BILLING APPEAL REQUEST FORM

Billing Appeal under Water District Policy #16-06 WD / Sanitary District Policy #16-04 SD

Date _____ Account Number _____

Name on account _____

Property Account Address:_____

If different: Your Name Michele Maynard_____Address 80147 Kent Road, Arch Cape OR_____

Contact Info (phone/email) 206-790-0668 michelemaynard@outlook.com_____

Date leak discovered / loss noticed	Date leak / loss repaired
November – primary bath toilet running and subsequently discovered leaking	December
Describe the water loss	Describe the repairs to your system
Primary toilet was running and leaking	Running toilet & leak corrected
Name of person or entity discovering leak	Name of person or entity repairing leak
Avantstay property management	Avantstay property management

Amount being appealed: $1806.25___ Date(s) of charges being appealed: November-December, 2022

_____

Basis of appeal: _____Water District Dwelling Leak Policy #17-02 WD

_____Sanitary District Dwelling Leak Policy #17-02 SD

NOTE: Leak and Billing Appeal Policies for the Water and Sanitary Districts may be obtained at District offices and found on-line at https://www.archcapewater.org/

THE UNDERSIGNED HEREBY CERTIFIES:

- that I have read the District Policies above indicated and this Appeal conforms to them;
- that the contents of this Request are true and correct;
- that the customer has complied with all requirements for relief under those Policies; and
- that the attached are true and correct copies of the invoice(s) paid for repairs.

*Signature: Michele Maynard*_____ *Date: 2/26/2023*_____

Michele Maynard - 1655

MONTH	*USAGE	EXCESS WATER FEE	EXCESS SANITARY FEE
First 5,000 included in Base Rate – see website for Tier Structure under "Resources / Rates & Fees" Calculations are shown at the bottom of the page.			
December	1540	$ -	$
January	3160		
February	3740	$ -	$
March	Base Rate	$172.00	$271.00
March	3000	$ -	$
April	6700	$ 4.25	2.13
May	9600	$ 19.50	9.75
June	Base Rate	$ 172.00	$271.00
June	4300		$
July	8100	$ 8.25	4.13
August	8400	$ 10.50	5.25
September	Base Rate	$ 175.00	$264.00
September	6400	$ 3.50	1.75
October	9700	$ 20.25	10.13
November	23500	$ 912.50	$893.75
	COST TO TREAT (.72 WD / .51 SD)	$ 129.08	$90.97
	APPEAL		
December	Base Rate	$175.00	$264.00
Less Paid		**$566.50**	**$832.26**
TOTAL:		$1,235.33	$1,255.60

Property
Kent Rd (SF 14) - Modern LoveOpen Kent Rd (SF 14) - Modern Love Preview
Edit Property
Case Record Type
Field Operations
Change Record Type
Case Number
00552922
Type
Maintenance
Edit Type
Subject
Toilet Handle
Edit Subject
Category
Plumbing
Edit Category
Status
Closed
Edit Status
Subcategory
Leak, Toilet
Edit Subcategory
Completed on
1/4/2023
Location in Home
Primary Bath
Edit Location in Home
Priority
High
Edit Priority
Description
Owner would like the handle repaired on the toilet in the main bathroom Said it was running when they arrived
Edit Description
Spend Approval Threshold Amount 1
$100
VPM Managed
VPM Managed
Edit VPM Managed
Quote
$90
Edit Quote
Owner Request
Owner Request
Edit Owner Request

Quote Details
MT rate: $45/hour
+ estimated materials
Edit Quote Details
Assignment
Field Ops
Edit Assignment
Quote Approver
Edit Quote Approver
Bill To
Owner
MT Vendor Rate
$45.00
Owner Outreach Required
No
Edit Owner Outreach Required
Owner Contacted
Help Owner Contacted
No
Edit Owner Contacted
Owner Approval Status
Yes - Approved

Interim Manager Report

Water:

- 285 of 295 meters are installed and in service. Billing was also able to be completed this month on the new meters / system
    - The remaining 10 meters will be scheduled as we will need a vactor truck and spare parts to replace broken parts.
    - Soon I will begin the process of learning how to interpret the incoming data in hopes that I can identify and repair leaks occurring throughout the district.

- Continuity of operations remains intact. Clean and safe drinking water is being supplied to the districts residents and guests.

- Curt Mcleod and I are going to finish facility and infrastructure walk through and compile a facility rehabilitation plan similar to the one provided to sanitary, but for water.

Sanitary:

- Diagnostics on MBR basin 2 continues. We received and test fit one of the permeate valves leaking, and have ordered the remaining valves for replacement. We will continue troubleshooting performance after this repair is done.
- Replaced two air release valves that were underperforming and in need of replacement and a rebuild.
- Continuity of all operations remains intact. Permit and compliance remains intact as does the reporting.
- Sanitary facilities walkthrough was primarily completed and a draft revision of our plan presented to the board via email was submitted. This required a lot of coordination between our engineers and I, and is something I am proud to present to all of you for review. Thank you to Curt and his team for generating this report.
- Budget – We will be aggressively working on a budget in the coming weeks. Our plan is to utilize the updated sanitary facilities plan and incoming water facilities plan to prioritize our budget proposals for both water and sanitary.

Engineering Report

ARCH CAPE SANITARY DISTRICT

Wastewater Treatment Plant Facility Plan Update

Clatsop County, Oregon

November, 2022

PRELIMINARY

CURRAN-McLEOD, INC., Consulting Engineers
6655 SW Hampton Street, Suite 210
Portland, OR 97223

ARCH CAPE SANITARY DISTRICT

WASTEWATER TREATMENT PLANT FACILITY PLAN UPDATE

Clatsop County, Oregon

November 2022

CURRAN-McLEOD, INC., Consulting Engineers
6655 SW Hampton Street, Suite 210
Portland, OR 97223
(503) 684-3478

ARCH CAPE SANITARY DISTRICT
WASTEWATER FACILITY PLAN UPDATE
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ARCH CAPE SANITARY DISTRICT

WASTEWATER FACILITY PLAN UPDATE

November 2022

EXECUTIVE SUMMARY

The Arch Cape Sanitary District wastewater collection and treatment systems have sufficient capacity to serve well beyond the 20 year planning window of this Facility Plan Update, with the exception of the Webb Avenue Pumping Station. The treatment processes operate efficiently and are easily able to meet permit requirements.

The following table shows the capacity of the treatment facility versus the loads observed in 2022. As can be seen, all loadings are well below the design capacity of the membrane bioreactor facility, with the exception of Peak Day Average Flow (PDAF). However, PDAF is easily accommodated by the 26,000-gallon surge tank ahead of the MBR basins, and PDAF in this vacation community typically occurs in the warmer seasons of the year when the membranes have higher capacities.

WWTF Existing Flows and MBR treatment Capacity		
Design Event	***Existing Flows, mgd***	***MBR Capacity, mgd (1)***
Average Annual Flow	0.127	0.345
Average Dry Weather Flow (ADWF)	0.102	NA
Maximum Monthly Dry Weather Flow (MMDWF)	0.168	NA
Average Wet Weather Flow (AWWF)	0.183	NA
Maximum Monthly Wet Weather Flow (MMWWF)	0.230	0.386
Peak Day Average Flow (PDAF)	0.530	0.528 (2)
Peak Instantaneous Flow (PIF)	0.586	0.738

(1) At 11^{o} C. At 15 ^{o}C PDAF capacity is 15% higher at 0.609 mgd.

This Facility Plan Update was primarily prompted by the need to identify a long-term solution to waste sludge processing, and concerns about the limited capacity and reliability of the main pump station at Webb Avenue. Equally important, however, was the need to complete a comprehensive inspection of the 15-year-old treatment facility to address facility maintenance and upkeep.

Sludge production over the past few years has exceeded the capacity of their drying beds. In recent years, the District has shipped waste sludge to the city of Seaside for processing. After an analysis of the cost effectiveness to treat their own waste sludge, the conclusion was that negotiating a continuing agreement with the City of Seaside was the best option for the District. Seaside has recently expanded their sludge processing capability and has encouraged the District work with the City.

The District's collection system has a substantial amount of inflow and infiltration (I/I). 3,400 feet of collection system piping was inspected in 2022, identifying approximately $70,000 of repairs that would reduce I/I. Additionally, the Capital Improvement Plan recommends as a longer term project that the District complete inspections of the 10,900 feet of collection system that has never been inspected.

The District has four pump stations in the collection system. All flow is routed through the Webb Avenue Pump Station. This station is 47 years old and was last rehabilitated in 1999. This station does not have adequate capacity or redundancy to serve the district. The loading frequently calls for both pumps to be energized, which then provides no redundancy. Due to its age and limitations, this station is the highest priority for improvement.

The remaining three pump stations throughout the collection system, North, Asbury Creek, and Sally's Alley, all function adequately, but two of the three are approaching the end of their service life. Sally's Alley Station was rehabilitated in 2015. North and Asbury Creek Stations are both nearing 20 years old, and although are currently operating fine, are both approaching the end of their service life.

CAPITAL IMPROVEMENT PLAN

There are only three high priority capital projects that warrant improvement in the next 5 years. The capital improvement plan is shown in the following table:

Table 14 - Capital Improvement Plan Summary

Capital Improvement	Estimated Cost	Priority
1. Webb Avenue PS Improvements	$350,000	1-5 yrs
2. Headworks Screening Upgrade	$250,000	1-5 yrs
3. Collection System Repairs	$70,000	1-5 yrs
Total 1 – 5 Years	**$670,000**	
3. Collection system TV Inspection	$55,000	6 - 10 yrs
4. North Pump Station Upgrade	250,000	6 - 10 yrs
5. Asbury Pump Station	250,000	6 - 10 yrs
Total 6 – 10 Years	**$555,000**	

Longer range needs, 6-10 years are intended to address I/I prior to exceeding the plant treatment capacity, and to anticipate the need to replace the North and Asbury Pump Stations prior to their failures. Each has served beyond their typical service life.

The Capital Improvement Plan totals $670,000 in the near term (1 to 5 year) projects, and an additional $555,000 in the following five years. If the district were the fund the 1–5-year projects with rate revenues, this would result in an approximate $12 per month increase, or $36 quarterly, per residential service for a 20-year debt repayment. A comparable rate increase for the long-range needs should be anticipated by 2030.

The existing plant facility has numerous operational and structural deficiencies as result of its nearly 15-year operations in the coastal climate. Some maintenance has also been deferred that needs to be addressed as soon as operator has time and budget available.

The highest priority deferred maintenance tasks total approximately $50,000 and impact plant performance and labor demands. These high priority needs should be budgeted as soon as possible to prevent additional deterioration.

ARCH CAPE SANITARY DISTRICT

WASTEWATER FACILITY PLAN UPDATE

November 2022

1. INTRODUCTION

The Arch Cape Sanitary District contracted with CURRAN-MCLEOD, INC. to evaluate the condition of the collection system and the process equipment and systems at the wastewater treatment facility. The plant has substantial capacity remaining; therefore, the primary purpose of this study is to update the capital improvement plan and address waste sludge processing.

The information in the previously approved *2005 Wastewater Facilities Plan* provided a guideline for development of the wastewater system through buildout of the entire service district and is still applicable today. Future improvements will primarily be required to maintain and improve operations. As equipment reaches the end of its service life, newer technology should always be evaluated for its replacement.

2. EXISTING FACILITIES

A. LOCATION

The Sanitary District serves the unincorporated community of Arch Cape located in southwest Clatsop County bounded on the east by the Coast Range Mountains and to the west by the Pacific Ocean.

The collection system consists of approximately 19,000 feet of gravity sewer lines, four pump stations, and 4,700 feet of pressure main piping. Wastewater is collected in four pump stations. One pump station is located at the north end of the District and one each is located at Asbury Creek, Sally's Alley, and Webb Avenue. All sewage flows from the collection system to the Webb Avenue pump station and is then pumped to the treatment plant.

The treatment facility is located near the south end of the District, one-half mile east of Highway 101, at the end of East Shingle Mill Lane.

B. HISTORY

The original treatment facility was constructed in 1975 as a conventional package wastewater treatment facility with a permit that allowed treated discharge to Arch Cape Creek from November 1 through April 30. From May 1 to October 31, effluent is required to be land applied.

In 2009, the treatment process was converted to a membrane bioreactor (MBR) process with fine screening, flow equalization, UV disinfection, and improved sludge handling and drying facilities. Improvements were also made to the reclaimed water

system with a new irrigation pump station at the application site. In 2011, a 4th cassette was added to each cell of the two MBRs to fully populate the MBRs and increase the plant capacity by 33%. Subsequently, in 2019 all flexible membranes were replaced.

C. SERVICE POPULATION

The ACSD currently serves 346 domestic connections which includes two commercial connections and one institutional connection, each contributing the equivalent of one single-family residence. The service district is limited by Clatsop County to a total of 485 connections at full buildout of the community.

3. WASTEWATER TREATMENT PLANT EVALUATION

A. TREATMENT FACILITY DESIGN LOADINGS

The September *2006 Wastewater Treatment Plant Pre-Design Report* identified the design loadings for the wastewater treatment facility at full buildout to be 485 connections. The design loadings are shown in the following table.

Table 1 - WWTF Design Loadings

Design Event	*Flow (mgd)*
Average Dry Weather Flow (ADWF)	0.112
Average Wet Weather Flow (AWWF)	0.186
Maximum Monthly Dry Weather Flow (MMDWF)	0.116
Maximum Monthly Wet Weather Flow (MMWWF)	0.176
Peak Day Average Flow (PDAF)	0.336
Peak Instantaneous Flow (PIF)	0.586

B. HEADWORKS SCREENING

The head works screening system consists of two 2 mm fine bar screens mounted in a common metal basin and a single compactor. Each screen has a peak flow capacity of 522 gpm (0.75 mgd). After the initial construction, a minor modification was made to the screenings discharge to prevent screenings from sloughing off into the screened effluent. Although old, the screening system does not appear to have any mechanical issues and is functioning as per the design.

Headworks Raw Screening

C. ANOXIC BASIN

The anoxic basin has a volume of 25,700 gallons and is equipped with two 1,175 gpm submersible pumps (one in service and one standby) to circulate mixed liquor to the MBR process and an 1,890 gpm submersible mixer to keep the basin contents suspended. The basin is covered to prevent debris from entering the basin. At the design $MMWWF_5$ of 0.176 mgd, the basin has a detention time of 3.5 hours.

Waste activated sludge (WAS) is pumped directly from the basin by a 75 gpm submersible pump to one of the two aerobic digesters.

The anoxic zone is designed for nitrogen removal to reduce ammonia concentrations in the treated effluent. The NPDES permit includes a daily limitation of 11.0 mg/L and a monthly limit of 7.5 mg/L for Ammonia as Nitrogen. Review of the 2021 DMRs (Discharge Monitoring Report) showed no detectible concentrations of Ammonia as Nitrogen in the treated effluent. The anoxic zone is functioning as intended and there are no known operational deficiencies.

D. EQUALIZATION BASIN

The Equalization Basin is designed to receive the overflow from the Anoxic Zone Basin during a high influent flow event. The basin has a volume of approximately 25,600 gallons and is aerated by a coarse bubble diffuser system. A 250 cfm variable speed blower provides air to the system. The basin has a detention time of 3.5 hours at the $MMWWF_5$.

The contents of the basin can be pumped back to the headworks screen and returned to the Anoxic Zone Basin by one of two 127 gpm equalization pumps or by relocating one of the two Anoxic Zone Basin transfer pumps in the basin to discharge the contents directly to the MBR basins. There appears to be no operational deficiencies and the basin has functioned as intended during high flow events.

Equalization Basin

E. MBR FILTRATION

The MBR filtration system consist of two basins with a volume of 21,000 gallons per basin. The basins are aerated by one of two 40 hp 877 cfm blowers.

Permeate is pumped from the basins by two positive displacement pumps. Each pump has a maximum capacity of 525 gpm (0.75 mgd). In the event of a failure of one pump, a single pump can be used to pump permeate from both basins.

Membrane Filtration System

The MBR was sized to process the design loadings to the treatment facility. The design is based on the flux rates, or gallons per day per square foot loading, specific to the duration of loading. The flux rate is temperature-dependent with a minimum design of 10^{o}C. The higher the temperature, the higher the allowable flux rate.

The KUBOTA USA membranes are a flexible flat plate membranes with the design criteria listed below. The table shows the initial design in 2009 with six cassettes and the increased capacity that was added in 2011 with two additional cassettes. The design flux rates, and design capacities are listed for 10^{o}C, 11^{o}C reflecting the DMR minimum temperatures, and 15^{o}C. Each cassette has an area of 3,444 square feet.

Table 2 – Flux Rates and Design Capacity								
Flow Criteria	*2007*		*2019*					
	At 10°C		*At 10°C*		*At 11°C*		*At 15°C*	
	gpd/sf	*mgd*	*gpd/sf*	*mgd*	*gpd/sf*	*mgd*	*gsf/d*	*mgd*
Average Annual	11.0	0.227	11.0	**0.305**	12.5	0.345	13.0	0.379
Max Month	12.5	0.258	12.5	**0.345**	14.0	0.386	15.5	0.426
Peak Daily	17.0	0.351	17.0	0.468	19.2	0.528	22.1	0.609
Peak Hourly (4hr)	14.0	0.496	14.0	0.656	26.8	0.738	30.0	0.825
No. of Cassettes	6		8					
Membrane Area Per Cassette (sq ft)	3444							

Since the temperature of the incoming wastewater has a significant influence on performance of the MBR treatment process, the temperature of the incoming wastewater was reviewed. The permit does not have an excess thermal load limitation, but the District is required to monitor effluent temperature. Temperature data obtained from the DMRs is shown in the following table:

Table 3 – Average Wastewater Temperature, °C										
Month	*2018*		*2019*		*2020*		*2021*		*2022*	
	Min	*Avg*	*Min*	*Avg*	*Min*	*Avg*	*Min*	*Avg*	*Min*	*Avg*
Jan	12.0	13	12	12.6	12	12.6	12.4	13.1	10.8	12
Feb	11.5	12	11.5	12.2	11.3	11.7	12.1	12.4	10.7	11.5
Mar	11.8	12	11.8	12.3	10.8	11.6	11.5	12.4	11.5	12.1
Apr	11.9	12	11.8	12.3	11.3	12.2	11.7	12.8	11.3	12.3
May	12.4	14	12.4	13.5	13.4	14	13.3	13.9	12.9	13.5
Jun	14.1	15	14.1	14.8	13.9	15.2	14.0	15.4	14.3	15.0
Jul	16.0	17	16	16.9	15.8	16.7	16.3	17.4	16.7	17.6
Aug	16.3	17	16.3	17.3	16.7	17.3	16.0	17.1	17.9	18.5
Sept	15.5	17	15.5	17	16.3	17	16.3	16.8	17.7	18.4
Oct	15.4	16	15.4	16	14.3	15.9	15.1	15.7	16.1	17.3
Nov	13.3	15	13.3	14.6	13.7	14.5	14.0	14.6		
Dec	12.9	13	12.4	13.3	12.4	13.3	11.1	12.7		
Avg Annual	13.6	14.4	13.5	14.4	13.49	14.3	13.7	14.5	14.0	14.8
WW Avg	11.8	12.4	12.2	12.9	11.9	12.7	12.3	13.1	11.6	12.5
DW Avg	15.0	15.9	15.0	15.9	15.1	16.0	15.2	16.1	15.9	16.7

The temperature of the incoming wastewater is lowest in January, February, and March, during the wet weather period, but higher than the minimum design temperature of 10° C, and the average temperature is 12 to 13° C. Dry weather temperatures exceed the minimum design temperature, averaging between 15 and 16° C. The higher the temperature, the greater the MBRs capacity to treat higher wastewater flows received at the facility.

NPDES Permit places limitations for BOD and TSS on the MBR treatment system as shown in the following table:

Table 4 - NPDES PERMIT BOD & TSS CONDITIONS					
May 1 – October 31: No discharge to waters of the State					
November 1 – April 30:					
Parameter	Average Effluent Concentrations		Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lbs
	Monthly	Weekly			
BOD_5	20 mg/L	30 mg/L	25	37.5	50
TSS	20 mg/L	30 mg/L	25	37.5	50

* Maximum month wet weather flow to the facility equals 0.18 mgd, however mass loads were retained from prior NPDES permits.

A summary of the treatment facility's performance meeting BOD_5 and TSS Monthly Average concentration and pound/day effluent limitations for 2021 was obtained from the DMRs and is shown in the following table:

Table 5 - WWTP 2021 MONTHLY AVERAGE BOD & TSS					
Month	*Effluent flow Monthly Average (mgd)*	*BOD_5*		*TSS*	
		mg/L	*Lb/day*	*mg/L*	*Lb/day*
January	0.228	1.19	3.15	0.07	0.15
February	0.222	1.00	1.78	0.08	0.13
March	0.143	1.75	1.72	0.10	0.10
April	0.090	1.12	0.74	0.10	0.68
May	0.080	1.27	0.74	0.09	0.55
June	0.080	1.69	1.08	0.16	0.11
July	0.070	2.16	1.25	0.28	0.16
August	0.060	1.48	0.77	0.06	0.03
September	0.070	1.97	1.06	0.10	0.06
October	0.150	1.24	1.30	0.11	0.11
November	0.240	1.06	1.37	0.09	0.13
December	0.200	0.62	1.07	0.08	0.13

As can be seen from the data for 2021, the MBR treatment system is producing effluent well below the NPDES effluent limitations and is expected to do so at full buildout of the community due to the design of the treatment process. A copy of the NPDES permit is bound in the appendix of this report.

F. UV DISINFECTION SYSTEM

The UV disinfection system consists of two closed vessel, medium pressure, high intensity systems with a design capacity of 0.72 mgd each. Flow is split between the two systems. Permeate is pumped through the vessels by the two permeate pumps. When there is no flow from the treatment system, a recirculation pump is called on to pump water back through the vessels to cool the lamps.

UV Disinfection System

The system is designed to meet NPDES permit limits for *E. coli* Bacteria of 126 organisms per 100 ml monthly geometric mean and no single sample to exceed 406 organisms per 100 ml. A summary of discharge monitoring report results for *E. coli* and Total Coliform Bacteria for 2021 is shown in the following table (Note: May – October effluent is land-applied).

Table 6 - 2021 DMR *E. coli* and Total Coliform Reporting				
Month	*E. coli Coliform Bacteria (organisms/100 ml)*		*Total Coliform Bacteria (organisms/100 ml)*	
	Monthly Geometric Mean	*Single Sample*	*Monthly Geometric Mean*	*Single Sample*
January	<1	<1		
February	<1	<1		
March	<1	<1		
April	<1	<1		
May			<1	13
June			<1	<1
July			1.38	5
August			2.37	8
September			1.55	9
October			<1	1
November	<1	<1		
December	<1	<1		

G. RECYCLED WATER SYSTEM

In accordance with the facility's NPDES permit, discharge to Arch Cape Creek is prohibited from May 1 through October 31. During this time, the disinfected effluent is to be land-applied as recycled water. The recycled water system consists of two submersible turbine pumps with a capacity of 150 gpm (0.21 mgd) at 250 feet of head each. The pumps are located at the treatment plant in the reclaimed water basin along with the UV recirculation pump.

Reclaimed Water Pump Station

The treated and disinfected effluent is pumped to an irrigation pond located offsite. An irrigation pump station is located adjacent to the pond and discharges effluent to a series of irrigation sets located in a wooded area east of the treatment plant site. The irrigation system is fully functional and does not appear to have any deficiencies. Pump capacity is adequate for the full buildout of the District.

Irrigation Pump Station

H. AEROBIC DIGESTER

Waste Activated Sludge is stored in two aerobic digester basins: a 25,400 gallon basin and 24,500 gallon basin. The basins are aerated by individual coarse air diffusers. A 20 hp blower can provide up to 250 SCFM of air to the basins. A 50 gpm submersible pump in each basin is used to transfer the basin contents to the sludge drying bed or wet sludge loadout. There are no known deficiencies associated with operation of the digesters.

Aerobic Digester No. 1

Aerobic Digester No. 2

I. SLUDGE DRYING BEDS

Gravity drying beds provide dewatering and storage of biosolids generated by the treatment process. There are two beds each with 3 bays, sand and gravel filtration systems, and a 4 inch underdrain, totaling 2,685 square feet. Operational practice indicates the beds require 6 to 8 weeks to dewater depending on the season, for a maximum of approximately 7-8 cycles per year. Following the dewatering process, the biosolids are spread on approved fields owned by the District.

The beds are capable of dewatering approximately 12,500 gallons per batch for a total of 90,000 to 100,000 gallons of 1.5 to 2% waste sludge per year. This process is labor-intensive, and disposal on the District's approved fields is more challenging each year. Although the District has sufficient land, concerns by neighboring properties and new regulations such as are contemplated with EPA's new action plan for per- and poly-fluoroalkyl substances (PFAS), make land application more challenging and costly each year.

Due to the waste sludge production, the drying beds must be operational year-round and loaded to their maximum capacity. Even loaded to the maximum, the drying beds have not been capable of processing the volume of sludge created for the past few years. The volume of waste sludge has increase by more than 12% per year for the past five years and totaled more than 135,000 gallons in 2021. The District has contacted with the City of Seaside to dispose of a portion of the liquid sludge for the past three years.

Sludge Drying Beds

Sludge processing is the largest deficiency at the treatment facility. Although the drying beds can produce a well-dewatered biosolid, the capacity of the beds and the cost of in-house biosolids processing make continuing this current process less feasible. There is insufficient storage and in-house treatment is likely not the most cost effective option.

Waste sludge hauled to the City of Seaside currently cost a total of approximately $0.40 per gallon, including the $0.17 per gallon charged by the City and approximately $0.23 per gallon for hauling costs.

If the sludge is processed in-house and field applied, labor efforts are estimated at 50 man-hours per 6 weeks to process and spread a 12,500 gallon batch. Additionally, testing costs amount to approximately $600 per batch before land application.

Processing sludge in-house with District staff costs approximately $0.25 per gallon. Considering the cost of equipment required for hauling and spreading the biosolids, the District's current cost is equal to or greater than the cost to haul it to the City of Seaside.

The bigger issue for biosolids treatment is lack of capacity. To continue to process sludge in-house, the District will need to install additional sludge processing facilities. This could be additional drying beds, although this would increase the labor requirements and the site is very limited.

Installing dewatering equipment, such as a centrifuge or screw press and associated building structure, would provide sufficient capacity but would be very expensive. A screw press or centrifuge is estimated to be $400,000, and the support building and facilities to be an additional $400,000 - $500,000. Debt service for a loan to construct these facilities is estimated to be $55,000 to $60,000 per year. Additionally, the District would need to continue to fund testing and labor efforts to land-apply the biosolids.

In total, installation of dewatering equipment, support facilities, testing, and labor for land disposal is estimated to cost approximately $0.60 per gallon. The District is effectively too big for continued use of the drying beds, but too small for a biosolids processing operation. These operating costs should also be expected to increase with time.

The City of Seaside (City) has invested in sludge processing equipment that has sufficient capacity to accommodate the District's waste, and the City has encouraged surrounding communities to use its capacity. Hauling and disposal to the City is the most cost effective and feasible alternative to provide the needed capacity at a reasonable cost. Current cost is estimated to be $0.40 per gallon for hauling and disposal and can be done in conjunction with continued use of the drying beds.

J. CAPACITY AND PERFORMANCE ANALYSIS

DMRs were reviewed to provide information on the wastewater flows to the treatment facility and determine the remaining capacity. The monthly Influent flow data from the last 5-years of DMRs is summarized in the following table:

Table 7 - Arch Cape WWTP Daily Influent Flow (MGD)															
Month	2018			2019			2020			2021			2022		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
Jan	0.106	0.124	0.279	0.078	0.119	0.196	0.129	0.245	0.413	0.108	0.228	0.499	0.130	0.230	0.530
Feb	0.084	0.124	0.189	0.075	0.135	0.362	0.087	0.189	0.468	0.111	0.222	0.417	0.100	0.120	0.140
Mar	0.079	0.124	0.242	0.066	0.084	0.123	0.079	0.114	0.212	0.098	0.143	0.248	0.110	0.170	0.420
Apr	0.088	0.164	0.376	0.081	0.119	0.216	0.068	0.094	0.181	0.070	0.090	0.109	0.110	0.140	0.200
May	0.053	0.078	0.105	0.057	0.075	0.106	0.069	0.098	0.145	0.070	0.080	0.100	0.107	0.168	0.235
Jun	0.054	0.033	0.087	0.054	0.063	0.071	0.073	0.105	0.137	0.070	0.080	0.120	0.100	0.155	0.287
Jul	0.053	0.061	0.083	0.058	0.075	0.104	0.080	0.075	0.126	0.060	0.070	0.100	0.064	0.092	0.119
Aug	0.042	0.054	0.066	0.040	0.061	0.190	0.064	0.073	0.085	0.050	0.060	0.080	0.058	0.073	0.092
Sept	0.041	0.055	0.107	0.041	0.078	0.142	0.040	0.083	0.268	0.040	0.070	0.130	0.047	0.058	0.084
Oct	0.044	0.077	0.170	0.061	0.120	0.274	0.085	0.136	0.217	0.090	0.150	0.350	0.049	0.065	0.099
Nov	0.074	0.132	0.312	0.062	0.089	0.139	0.106	0.200	0.329	0.140	0.240	0.550			
Dec	0.087	0.156	0.372	0.070	0.136	0.444	0.110	0.170	0.370	0.140	0.200	0.320			
AWWF	0.089	0.134	0.272	0.077	0.124	0.264	0.083	0.145	0.310	0.101	0.176	0.329	0.122	0.183	0.360
" gpm	62	93	189	53	86	183	57	100	215	70	122	228	85	127	250
ADWF	0.048	0.060	0.103	0.052	0.079	0.148	0.069	0.095	0.163	0.063	0.085	0.147	0.071	0.102	0.153
" gpm	33	41	72	36	55	103	48	66	113	44	59	102	49	71	106
Avg Annual		0.099			0.096			0.132			0.136			0.127	
MMDWF		0.078			0.120			0.136			0.150			0.168	
MMWWF		0.164			0.136			0.245			0.228			0.230	
PDF			0.376			0.444			0.468			0.550			0.530

The design criteria from the MBR manufacturer are based on four events: Average annual flow, MMWWF, PDAF and a Peak Hourly flow (for 4 hours) as shown in Table 2.

Monthly minimum and average flows and Peak Day flows are shown in the preceding table. The monthly average wet weather flows (AWWF) have shown a relatively steady increase from 0.134 mg to 0.183 mgd with dry weather average flows (ADWF) increasing from 0.060 to 0.102 mgd. These are well within the 0.345 mgd annual average design criteria for the MBR treatment process.

The maximum month wet weather (MMWWF) flows during the last 5-year period have increased with an MMWWF of 0.245 mgd in January of 2020. In 2022 the maximum recorded flow was 0.230 mgd. The maximum month dry weather flows (MMDWF) increased from 0.078 to 0.15 mgd during this period. The critical wet weather flows are currently less than 60% of the 0.386 MBR maximum month design capacity at 11^{o}C.

The MBR is designed for a peak day flow of 0.528 mgd at 11^{o}C. A peak day flow of 0.55 mgd was recorded in November of 2021 with 0.53 mgd occurring in January of 2022. To attenuate peak flow events, the MBR process is preceded by a 26,000 gallon equalization basin. Flows are diverted to this basin when peak day flows occur.

The MBR process is capable of treating peak hour flows of 0.738 mgd for 4 hours. PIF is not a factor in the capacity of the system since the PIF is attenuated by detention in the collection system, the pump station capacity, and detention in the equalization basin.

Based on the current flows the treatment facility has adequate capacity to treat existing ADWF, AWWF, $MMWWF_5$ and $MMDWF_{10.}$ PDAF flow are being handled by a combination of the equalization basin and the ability of the MBR to treat a peak hour flow of 0.738 mgd.

The following table summarizes the existing flows and MBR design capacity:

Table 8 - WWTF Existing Flows and MBR treatment Capacity

Design Event	*2006 Design Loading, mgd*	*Existing Flows, mgd*	*2022 MBR Design Capacity, mgd (1)*
Average Annual Flow	0.114	0.127	0.345
ADWF	0.112	0.102	NA
$MMDWF_{10}$	0.186	0.168	NA
AWWF	0.116	0.183	NA
$MMWWF_5$	0.176	0.230	0.386
PDAF	0.336	0.530	0.528
PIF	0.586	0.586	0.739(2)

(2) At 11° C (2) Peak Hourly flow for 4-hours

From the preceding table it can be seen that the existing 2022 ADWF and $MMDWF_{10}$ are less than the 2006 design loadings to the treatment facility. However, the average annual and wet weather flows exceed the original design loadings.

The ratio of the existing PDF to ADWF is 6.5:1. This increase between the wet weather and dry weather flows is attributed to inflow and infiltration (I/I) into the collection system during wet weather. This indicates that the amount of I/I entering the collection system has increased over time.

Removal of any I/I from the collection system will augment the wet weather treatment capacity of the treatment facility. In addition, reduction in the PDAF associated with I/I is needed to prevent oversizing the Webb Avenue pump station and potentially exceeding the MBR PDAF treatment capacity.

K. Facility Maintenance

The wastewater treatment facility was upgraded in 2009 to the membrane bioreactor facility, including a new office, lab, control building and maintenance shop in addition

to the treatment units. At nearly 15-years-old, a general inspection of the entire facility was warranted and completed as part of this facility plan update.
The inspection identified numerous items that need to be addressed to maintain plant operations:

1) Office/Lab Building:

1 Since construction of the MBR plant, the District's membrane supplier, Kubota Membrane USA, has separated from the original supplier, Enviroquip, and Enviroquip was subsequently purchased by OVIVO, a large wastewater process equipment provider. The plant currently uses the Enviroquip software to monitor and control the operations but could consider moving to Kubota operating software in the future when the current systems need to be upgraded. Currently the existing control software works well and no replacement should be considered.

2 Workstation Upgrade. The office computers and software should be reviewed every few years to ensure programs are maintained and current. The immediate need is to upgrade the obsolete Win 911 alarm communication system which is no longer supported. The plant IT support team has recommended an upgrade to TopView alarm management software.

3 The current lab DO meter is obsolete and difficult to maintain calibration. The District should replace the obsolete YSI 58 model.

4 The water distillation unit is essential to good lab results. The original unit provided with the plant upgrade failed years ago and should be replaced.

5 Exterior siding has several areas of decay adjacent to drainage locations, where the siding has completely failed. Isolated sections of the T-111 Breckenridge siding and batts need to be replaced and painted.

6 The cabinets in the lab have numerous structural failures that should be repaired, including restoring the glassware cabinet and drawers that have failed.

7 The communication equipment in the entry closet is in disarray and various components are obsolete. This area should be reorganized and documented to better operate and maintain the communications processes.

8 Bathroom ceiling vent fan leaks rainwater. The building structure is in good shape as evident from our attic inspection; however the vent pipe is allowing water to run into the bathroom fan and onto the floor.

9 Periodically, the floor tile should be stripped and waxed to maintain their function and appearance. Many companies specialize in floor maintenance and can refurbish the floors quickly. A commercial clean and wax should be done periodically.

10 The weather station and data logger has failed and should be replaced for plant record keeping.

2) MBR Control Building:

1 Both permeate pumps have motor and gearbox oil leaks that should be investigated and repaired to avoid potential damage.

2 The Aquionics UV Disinfection system appears to have multiple component failures. Water is draining from the internal vents which indicates multiple seal failures and likely associated corrosion of the operating components. Frequent lamp failures appear to be the result of deferred maintenance on the intensity sensing units indicating a false bulb failure alarm, and the automatic cleaning mechanisms. Both units have deteriorated to the point that a factory rehabilitation is mandated.

3 All four blowers should have routine annual maintenance. Currently one digester blower has failed and is out of service and waiting for factory service for repair. To avoid premature failure, factory service should be scheduled annually or biannually as recommended.

4 The Human Machine Interface (HMI) unit in the MBR control room has failed eliminating the ability to manually operate the plant if the primary computer system were to fail or be off-line. This unit needs to be replaced as soon as possible.

5 Similar to the office, several areas of the siding have water damage that will require replacing the siding and batts.

3) Process Units:

1 Kubota recommends an inspection and service for the flexible membranes on a biannual basis. The new membranes have been in-service for three years now without inspection, and warrant service to maintain their performance.

2 The Headwork's screens are functioning as designed but are no longer accepted for Kubota membrane facilities. The screens need to be replaced with 2 mm perforated drum screen. Debris passing through the screens have caused partial plugging of the Kubota membranes. The membranes need to be manually removed and cleaned to restore treatment efficiency. Replacement of the screens has been added to the Capital Improvement Plan.

3 The PVC ball vales on the MBR permeate lines are beginning to have seal failures allowing vacuum leaks into the permeate pump suction. This introduces air into the permeate which imbalances the membrane loading and then impacts the disinfection sensors. Approximately 25% of the 16 existing valves appear to be failing. All valves should be replaced.

4 The sluice gate valve on the headworks discharge line to the anoxic basin has failed and as a result, the anoxic cell cannot be taken off-line for maintenance. This valve needs to be refurbished and routinely exercised to maintain operations.

5 GH Bettis electric valve actuators (4) on the air supply lines to the MBR basin are operating beyond their service life and replacement should be scheduled. These are essential to operation but can be operated manually for short periods.

6 The anoxic cell mixer has seal failure and mandates replacement. Currently it is continuing to operate but in moisture fail mode. This unit should have a gantry to better facilitate maintenance.

7 The mud valve that drains the east MBR basin has failed, and the basin cannot be drained for service. West basin valve is operational however, it is unlikely to be able to reseal if ever actuated. Both values should be rehabilitated when the basins are being serviced.

8 The utility pump station check valve has failed and requires manual operation to dewater any of the on-site treatment basins. This valve should be replaced, or the discharge line could be raised above the headworks to eliminate the need for a check valve.

9 LMI diaphragm pump for magnesium hydroxide Ph/Alkalinity dosing system at the headworks is on the ground as a temporary operation. This should be permanently integrated into the headworks design.

10 Coarse bubble Aquarius diffusers appear to have multiple plugged orifices requiring cleaning, possible due to the volume of solids settled in the bottom of the basin. The digester basins should be dewatered periodically, the settled inorganics removed, and the diffusers serviced.

11 The sludge feed lines to the west bays 1 and 2 in the east sludge drying bed are failed. Both drying beds are recommended to be decommissioned in favor of contract with Seaside, so not repairs to this piping system is warranted.

4) Vehicle Garage/Shop:

1 The automatic transfer switch for the WWTP auxiliary generator appears to be fully operational however, the Harmonic Correction Unit has failed and should be rehabilitated to protect the plant equipment if feasible.

2 All five generators are serviced annually and maintained in good shape (4 at plant including portable units for the Webb Pump Station, Asbury Pump Station, North Pump Station, and the fixed generator for the WWTP operations, and the permanent generator at Sally's Alley). Scheduled maintenance should continue for these facilities.

3 The shelf storage in the shops contains a substantial number of supplies that warrant reorganization. With the extensive supply chain delays, commonly used components should be secured and stored until needed.

5) Plant Site/Vehicles:

1 All yard light fixtures and light sensors are failed, including 2 post-top lights and 10 wall packs. This creates a safety concern for plant operations and all lights should be Replace with current LED fixtures.

2 Plant access road needs rock maintenance, or potentially a new AC pavement to better accommodate sludge hauling to Seaside and avoid further damage. This driveway is an easement and a shared driveway with the adjoining property owner.

3 The service tractor is adequate however; the brush mower is not operational. This mower should be replaced with a flail mower for maintenance of the biosolids disposal sites and access road maintenance.

4 The Ford F450 Dump Truck in acceptable condition and the engine was replaced in 2022, but dump bed very corroded. The bed should be inspected and repaired as needed before failure.

4. WASTEWATER COLLECTION SYSTEM EVALUATION

A. Collection System Piping

As documented in the *2005 Wastewater Facilities Plan*, the District's collection system consists of approximately 19,000 feet of gravity sewer, four pump stations, and 4,700 feet of force mains. One pump station is located at the north end of the District, and one each is located at Asbury Creek, Salley's Alley, and Webb Avenue. All wastewater from the outlying pump stations and the gravity collection systems flow to the Webb Avenue pump station, where is it pumped to the wastewater treatment facility headworks.

In 2014, Inflow and Infiltration (I/I) Improvements were made to approximately 5,000 feet of the collection system. Most of this work consisted of in situ repairs. Repairs were made from manhole E-8 to E-4, A7-1 to A-17, A17 to A-16, A-11 to A-7 and from A-7 to A1-6.

In March 2022, approximately 3,400 feet of gravity sewer lines were inspected. The inspection revealed deficiencies in several sections of the collection system including leaking laterals, cracked joints, missing sections of pipe, debris/blockage, and root penetrations. Summaries of identified deficiencies are shown in the following table and the field reports are attached in Appendix B:

Table 9 - Pipe Inspection Report Summary

Manholes		*Length (feet)*	*Observations*
From	*To*		
A9.1	A19	305	Water leaking from lateral. Dirt/debris blocking 40% of pipe.
A19	A20	237	Water Leaking from lateral.
A21	A20	218	Water pulsing out from lateral.
A22	A21	394	Water leaking form three (3) laterals. Roots protruding from joint in lateral.
B2	B1	140	Water leaking from pipe in lateral. Unable to proceed due to rock/debris blockage.
C2	C1	145	
C1.1	C2	331	Water leaking from lateral. Roots protruding from lateral.
C3	C2	279	Water leaking from joint in lateral.
C4	C3	144	Water Dripping from crack.
E2	E1	63	Water Leaking into pipe.
E3	E2	234	Chunk of pipe broken/missing. 50% dirt/debris blockage
Total		**3,436**	

With base dry weather flows in the range of 0.06 to 0 0.085 mgd in 2021 and a peak flow during the wet weather of 0.55 mgd, there are obviously significant sources of I/I. It should also be noted that the wet weather base flow occurs during the season when the District experiences typically low population. As the District evolves to have more year-round occupancy, the District should embark on an aggressive program to locate, identify, and make repairs to the collection system, to reduce I/I into the remaining 10,600 feet of the collection system that has not been inspected.

B. Pump Stations

1) North Pump Station

The North pump station receives wastewater from the far north end of Arch Cape Sanitary District and serves and estimated 75 homes. According to literature provided by the District, the pump station consists of two 7½ Hp self-priming Smith & Loveless pumps, each with a design capacity of 200 gpm @ 60 feet of head. Flow is discharge

from the station through an 890 foot long 4 inch force main to manhole E-11 at the intersection of Larch Street and Pacific Road. The S & L packaged pump station is set over a 14.5 foot deep 6-foot diameter wet well.

North Pump Station

A recent review of the pump runtime records for June through August 2021 shows the pumps are operating 1 hour per day or less during dry weather. Increased wet weather flows and storm events were noted to increase flows to the pump station. An example of the rainfall recorded between January 10th and 18th 2022 is shown in the following table where the run times increased to 22 hours or an average of approximately 3 hours per day.

Table 10 - January 2022 Rainfall Storm Event	
Date	**Rainfall (inches)**
1/10	0.30
1/11	1.23
1/12	2.71
1/13	1.03
1/14	0.50
1/15	0
1/16	0
1/17	0
1/18	0.22

Since daily readings of pump run times are not recorded, the actual hours of operation each day cannot be determined. However, the storm events were followed by no rain on the following 3 days, so longer run times per day were likely to have resulted at the beginning of the time frame.

In an effort to determine the actual pump discharge flow, a drawdown of the pump station was intended to be performed with the assistance of the Arch Cape Sanitary District staff. Upon inspection of the station, it was determined that this approach was not feasible due to the submergence of the inlet sewer line, and shallow depth of the wet well from the sewer line invert.

There are no critical deficiencies associated with the operation of the pump station; however, it was installed in 2005 and is beginning to show signs of deterioration due to the coastal environment and is also reaching the end of its projected 20-year service life.

2) Asbury Pump station

The Asbury pump station is located on Pacific Road just east of Asbury Creek. The pump station serves an estimated 68 homes. The pump station also receives flows from the North Pump Station. It is similar to the North station in that it is also an S & L station with the same design and performance: 200 gpm @ 60 feet. Flow is discharged from the pump station through a 380-foot long 4 inch force main to manhole C-3 at the intersection of Pacific Road and Shanks Avenue. The S & L packaged pump station is set over a 15 foot deep 6 foot diameter wet well.

Asbury Pump Station

Pump runtime records for June through August 2021 show that the pumps are operating 2 - 3 hours per day or less during dry weather. The January 10th through 18th 2022 timeframe was again reviewed. From January 10th to January 14th, the pump station ran a total of 68 hours or an average of 17 hours per day, and from January 14th to January 18th, it ran 34 hours or an average of 8.5 hours per day.

As with the North End Pump Station, it was also the case that a determination of the pump discharge flow could not be performed at this station due to the submergence of the inlet sewer line, and shallow depth of the wet well from the sewer line invert.

There are no critical deficiencies associated with the operation of the pump station; however, it was installed at the same time as the North end pump station and is also beginning to show signs of deterioration due to the coastal environment and is also reaching the end of its anticipated 20-year service life.

3) Sally's Alley Pump Station

The Sally's Alley Pump Station is located at the intersection of Pacific Road and Sally's Alley. The pump station serves an estimated 41 homes and receives wastewater from the gravity collection system in the area as well as wastewater from the North End and Asbury pump stations. The pump station was rebuilt in 2015 as a submersible pump station with two 5 Hp pumps. Each pump has a design capacity of 220 gpm at 37' TDH. Flow is discharged from the wet well pumps through a 4 inch 320-foot-long force main to manhole A-21 at the intersection of Pacific Road and Montbrecia Lane.

Sally's Alley Pump Station Control building

Sally's Alley is the only station with remote telemetry. The telemetry system monitors several system parameters including wet well level and pump runtimes. This information should be useful in analyzing the existing performance and capacity of the pump station through a snapshot of the online data.

August 2021 and June 2022 runtime records show pump runtimes during dry weather of approximately 3 hours per day. January 10th through 14th 2022 runtimes totaled 105 hours over the 4-day period. This indicates that both pumps were on at some time during this event to handle the flows into the pump station. From January 14th through the 18th, a total of 53 hours were recorded with an average run time of 13.25 hours per day. In total, the pump station ran a total of 158 hours over an 8-day period with an average run time of 15.8 hours.

Inspection of the pump operation at Sally's Alley revealed that the submersible pumps are not seating on the base elbows. This is allowing sewage to be recirculated back in to the wet well, resulting in longer run times and an inability to confirm the actual pump discharge rate by performing a drawdown test.

In the absence of test data, the station capacity is anticipated to match the published performance of the pump.

4) Web Avenue Influent Pump Station

The Webb Avenue pump station is located at the intersection of East Beach Road and Webb Avenue, approximately 240 feet east of Highway 101, and receives wastewater from approximately 166 homes in the south end of Arch Cape. All wastewater enters the station through a single 8 inch gravity sewer line.

The station consists of a wet well with duplex submersible pumps and a standby generator housed in a wooden structure. The pump station servers as the influent pump station to the District's wastewater treatment facility. Sewage is pumped to the WWTF headworks through a 6 inch diameter 2,150 foot long force main.

In 1999, the pump station equipment was rebuilt with new pumps, valving, piping, and control system. The submersible pump impellers were replaced in August 2014, increasing pump capacity to 300 gpm (0.432 mgd) using the available remaining pump horsepower without overloading the motor. With both pumps running, the pump station is capable of discharging 0.583 mgd (405 gpm) according to the District.

Webb Avenue Pump Station

August 2021 runtime records show pump runtimes during dry weather of approximately 3 hours per day. January 10th through 14th 2022 runtimes totaled 79 hours over the 4-day period or an average of 20 hours per day. From January 14th through the 18th, a total of 48 hours were recorded with an average run time of 12 hours per day. In total, the pump station ran a total of 158 hours over an 8-day period with an average run time of 15.9 hours.

DMR records show daily average wet weather flows from the pump station to the treatment plant increased over a 5-year period from 0.134 mgd to 0.176 mgd (122 gpm). In addition, the peak day flow increased from 0.372 mgd to 0.55 mgd (382 gpm) in November of 2021 and 0.53 mgd (368 gpm) in January of 2022, requiring both pumps to be in service to meet flow to the pump station. This demonstrates that existing reliable pump capacity is inadequate to meet existing or future flows with additional development in the District.

4. RECOMMENDATIONS

A. Treatment Facility

The existing treatment facility has numerous maintenance issues that should be addressed as soon as possible. The treatment processes are all functioning reliability however, redundancy is limited due to the deferred maintenance. The systems were designed for the full buildout of the District and have surplus capacity. No improvements are needed to the aeration systems, membranes, or pumping systems. The influent slot screens should be replaced with perforated plates as soon as possible to reduce plugging of the membranes and associated maintenance.

The treatment facility has adequate capacity to treat the projected ADWF, AWWF, and MMWWF at full buildout of the District. PDAF exceeds the membrane capacity but is

effectively treated with the use of the existing equalization basin storage capacity, excess Anoxic Zone Basin volume, and the buffering capacity of the pump stations and collection system.

Flux rates for the MBR are higher than the original design parameters due to the higher operating temperature demonstrated in the DMR records and the addition of the additional cassettes. This permits the MBR to treat the existing higher flows during the winter wet weather period. The summer water temperatures are significant higher and result in the treatment facility having a significant increase in treatment capacity during warmer periods.

Waste sludge processing is recommended to continue the use of the drying beds, if desired, with excess flow delivered to the City of Seaside. Discontinuing the use of the drying beds entirely would only add a small increment in operating cost and would restore manpower capacity for the plant operators. Operators currently expend approximately 300 hours per year processing waste sludge. These manhours would be efficiently utilized in other system operations as the system grows.

B. Collection System

The District made repairs to sections of the collection in 2014 with in situ lining of approximately 5,400 feet of sewer line along with other miscellaneous repairs. In 2022, 3,400 feet of the collection system was inspected and cleaned, revealing damage or missing pipe and leaking laterals as well as intrusion of roots. The collection system sections where repairs are needed are shown in the following table.

Table 11 - Pipe Inspection Report Summary

Manholes		***Length (feet)***	***Observations***
From	***To***		
A9.1	A19	305	Water leaking from lateral. Dirt/debris blocking 40% of pipe.
A19	A20	237	Water Leaking from lateral.
A21	A20	218	Water pulsing out from lateral.
A22	A21	394	Water leaking from three (3) laterals. Roots protruding from joint in lateral.
B2	B1	140	Water leaking from pipe in lateral. Unable to proceed due to rock/debris blockage.
C1.1	C2	331	Water leaking from lateral. Roots protruding from lateral.
C3	C2	279	Water leaking from joint in lateral.
C4	C3	144	Water Dripping from crack.
E2	E1	63	Water Leaking into pipe.
E3	E2	234	Pipe broken/missing. 50% dirt/debris blockage

The location of the leakage and damages appear to be primarily in the lateral connections. More information can be found in the report provided to the District by Spartan Environmental Services bound in the appendices. The District should proceed with the necessary repairs to the collection system and laterals as funding is available. Collection system repairs are estimated to be:

Table 12 – Collection System I/I Repairs Cost Estimate	
Lateral Connection Repair, 10 ES @ $2,500	$25,000
Lateral Relining/Bursting, 200 LF @ $60/LF	$12,000
Mainline 8" Spot Repairs, 6 @ $3,000	$18,000
Subtotal	$55,000
Engineering & Contingency 25%	$15,000
Total	**$70,000**
Collection Clean & TV, 10,900 LF @ $4/LF	$44,000
Engineering & Contingency 25%	$11,000
Total	**$55,000**

Repairs to laterals are difficult to fund and to construct since the laterals are on private property. The Capital Improvement Plan recommends the lateral connections and short portions of the leaking laterals be repaired by relining or pipe bursting to minimize disturbance on private property. The District could develop a program for private property owners to fund a portion of the improvements with a low interest loan or subsidy.

To provide the ability to meet future peak day flows, an aggressive collection system I/I reduction program needs to be implemented. This should include inspecting the remaining 10,900 feet of the collection system to locate and identify other deficiencies in the collection system that contribute to I/I. A program of annual inspections needs to be in place until the remaining sewer lines are inspected and repaired.

C. Pump Stations

1) North and Asbury Pump Stations

Both stations have a current design of 200 gpm. Both stations have adequate capacity to serve the District, however, the stations are 17 years old and will need to be replaced in the relatively near future.

Conversion to submersible type pump stations is recommended when they are replaced to minimize exposure of equipment to the marine environment and make the stations similar to the Sally's Alley and Webb Avenue pump stations. The estimated cost of replacing each pump station is shown in the following table.

Table 13 – North and Asbury Pump Stations Cost Estimate	
North and Asbury Pump Stations	**Cost Each**
Pumping Equipment	$40,000
Mechanical Piping Modifications	20,000
Control Panel & Wiring Improvements	40,000
Disconnect Enclosure/electrical	25,000
Auxiliary Power Plug & Transfer Switch	15,000
Miscellaneous Improvements	20,000
Remote telemetry unit (RTU)	10,000
Temporary Bypass Pumping	5,000
Subtotal	$175,000
Engineering & Contingency 40%	75,000
Total	**$250,000**

Backup power systems are not being proposed at either station. The short run times as seen from the pump station runtime documentation does not warrant the added expense of a standby generator at these two sites. However, each station should be equipped with a generator plug to allow the District to move their standby generators to each site to provide backup power in the event of a power outage.

2) Sally's Alley Pump Station

Overall, the pump station is in good condition, but an estimation of the pump station performance based on actual wet well levels and runtimes from the Mission telemetry system show pump performance of approximately 90 gpm rather than the 220 gpm design. With two pumps on, the records indicate the pump station only discharges 120 gpm. The telemetry also recorded numerous events and extended runtimes when both pumps were in operation during wet weather storms. If in fact two pumps are required to operate during storm events, the station does not have reliable capacity.

Field inspection of this station revealed that the metal-to-metal face of the pump discharge was not seating, and a substantial amount of the pump discharge was recirculated back into the wet well. Ensuring the pump seat is sealed should provide the needed capacity with 100% redundancy.

If this resolution does not provide the needed reliable capacity, one option would be to increase pump flow by replacing the pump impellers with larger diameter impellers to increase the design flow. This increase would be limited to the available horsepower but is a very cost effective option. A careful calculation of the system/pump performance would need to be completed to ensure that the pump would not be overloaded. Replacing the impellers is estimated to cost $5,000 - $6,000 for the two pumps.

An alternative to increasing the impeller size would be to replace the existing 4 inch force main with a 6 inch force main. This would reduce the pumping head, reduce power costs, and increase the existing pump capacity by approximately 50%. The existing force main is 320 feet long and estimated to cost $25,000 - $30,000 to replace. This option would restore the pump station reliability and increase each pump's capacity to approximately 300 gpm due to the reduced system head.

3) Web Avenue Pump Station

The deteriorated building structure and limited capacity pumping equipment mandate a major renovation of this station. Pump station improvements should include:

- Installation of new submersible pumps
- New pump station controls with variable frequency drives (AFDs)
- Standby generator with automatic transfer switch
- New control/generator wood-framed building

The existing wetwell should be inspected for deterioration, repaired as needed, and reused. The existing discharge valve vault should be sufficient for continued use.

The tentative pump selection for this station has a flow range of approximately 200 gpm (0.287 mgd) to 500 gpm (720,000 gpd) when operated with an adjustable frequency drive. This will result in some pump cycling during low dry weather flows.

The existing 6 inch force main would have a maximum velocity of 5.7 fps at 500 gpm; however, this would only occur during a peak flow event, which would be very infrequent. A moderate pump flow of 300 gpm would have a velocity of approximately 3.4 ft/sec.

Preliminary design calculations indicate that the increase in dynamic losses will require pump horsepower to be increased from 10 Hp to approximately 40 Hp at PDAF. However, the power consumption would only need to match the operating flow horsepower requirement, which would be less than 15 Hp. This justifies continued use of the 6 inch force main.

The estimated cost of the pump station improvements is shown in the following table.

Table 14 – Webb Ave Pump Station Cost Estimate	
Webb Avenue Pump Station	**Cost**
Pumping Equipment	$40,000
Mechanical Piping Modifications	10,000
Control Panel & Wiring Improvements	40,000
Electrical Disconnect Enclosure	10,000
Standby Generator & ATS	65,000
Miscellaneous Improvements	10,000
Generator/Control Building	75,000
New Electrical Service	15,000
Remote telemetry unit (RTU)	5,000
Temporary Bypass Pumping	5,000
Subtotal	$275,000
Engineering & Contingency 25%	75,000
Total	**$350,000**

D. Deferred Maintenance

The following table is a preliminary budget estimate of tasks required to address all identified deficiencies at the plant site. Most do not impact plant performance but do require increased labor burdens or operational tasks. These tasks should be completed as soon as time and funding allow. The operational critical improvements are identified as higher priority and should be addressed first.

Table 15 – Maintenance Task Cost Estimates			
	Total	**Budget**	**Priority**
Office / Lab:			
1	Future Kubota Operating Software	---	---
2	Workstation Alarm System Upgrade	$8,000	1
3	Replace Desktop DO Meter	$3,000	1
4	Lab Water Distillation Unit	$1,500	1
5	Exterior Siding Repairs, Est 40 SF	$400	2
6	Lab Cabinet Repairs	$1,000	3
7	Communication Consultant	$2,000	3
8	Bathroom Ceiling Vent Repairs	$400	3
9	Office Lab Floor Strip/Wax	$1,000	3
10	New Weather Station and Data Logger	$1,200	3

MBR Control Building:			
1	Permeate pumps Gear box Repairs	$400	1
2	Aquionics UV System Rehabilitation	$12,000	1
3	Blowers Factory Service Assistance	$3,000	1
4	HMI Panel Replacement	$3,000	1
5	Exterior Siding Repairs, Est 80 SF	$500	2
Process Units:			
1	Kubota Factory Service	$5,000	1
2	Headwork's Screens (Added to the CIP)	---	1
3	MBR Permeate Lines PVC Valve Replacement (16)	$7,500	1
4	Anoxic Cell Sluice Valve Rehabilitation	$600	2
5	MBR Air Electric valve Actuators (4)	$16,000	2
6	Anoxic Cell Mixer Gantry & Hoist System	$5,000	2
7	MBR Mud Valve Rehabilitation (2)	$3,000	2
8	Utility Pump Station Check Valve	$600	3
9	LMI Diaphragm Pump Mounting	---	3
10	Digester Sediment Removal and Diffuser Service	$2,000	3
11	Sludge Drying Bed Piping	---	---
Vehicle Garage/Shop:			
1	Harmonic Correction Unit Evaluation	$2,500	1
2	Annual Generator Servicing	---	2
3	Shelf Storage Systems Organization	---	3
Plant Site/ Rolling Stock			
1	Yard Light & Fixture Repairs	$4,000	1
2	Plant Access Road Maintenance	$300	3
3	Replacement Flail Mower	$3,000	3
4	Ford F450 Dump Truck Inspection	---	---

5. IMPROVEMENT & FUNDING PLAN

A. Capital Improvement Plan Summary

The Arch Cape Sanitary District Treatment facilities are in good condition with adequate capacity except for sludge processing. The cost-effective solution to sludge processing is continued use of the drying beds as supplemented by hauling and disposal at the Seaside Wastewater facility if feasible arrangements can be negotiated. The only capital improvement recommended for the plant is to upgrade the headworks screens with a 2

mm perforated drum screen. This is not capacity related, but rather performance related and causes damaging impacts to the membrane systems.

Infiltration and Inflow are the largest concern in the collection system and warrant continued repair as funding is available. The collection system has several defects identified in the most recent video inspection that need repairs and the District should make a long-term commitment to budget for inspection of the remaining collection system.

The Webb Avenue Pump Station replacement is the most pressing issue for the District. The Webb Avenue station has no redundancy, and in the event of a pump failure during peak flows would very quickly overflow to Arch Cape Creek and the Pacific Ocean. The current operations violate DEQ guidelines and will result in a DEQ order if allowed to continue.

The remaining pump stations continue to operate acceptably and do not pose concerns. The District should anticipate replacing the North and Asbury stations in the 6-10 year time frame.

Table 16 - Capital Improvement Plan Summary

Capital Improvement	Estimated Cost	Priority
1. Webb Avenue PS Improvements	$350,000	1-5 yrs
2. Headworks Screening Upgrade	$250,000	1-5 yrs
3. Collection System Repairs	$70,000	1-5 yrs
Total 1 – 5 Years	**$670,000**	
3. Collection system TV Inspection	$55,000	6 - 10 yrs
4. North Pump Station Upgrade	250,000	6 - 10 yrs
5. Asbury Pump Station	250,000	6 - 10 yrs
Total 6 – 10 Years	**$555,000**	

B. Maintenance Needs

Routine maintenance warrants a substantial number of small repairs throughout the plant as listed above. These repairs should be completed as operator time and funding is available to avoid further deterioration and operational failures. The highest priority tasks total an estimated $50,000. The total of all deferred maintenance tasks is estimated at $90,000.

C. Funding Program

The Arch Cape Sanitary District current user rates are $264 per quarter per equivalent dwelling unit, and they serve 346 current users. That quarterly revenue is used to service two current debt obligations to Business Oregon, amounting to approximately $38,000 debt service per year.

In addition, the District uses property tax revenues to retire a general obligation bond debt to USDA Rural Services for construction of the Wastewater Treatment Plant. Annual debt service to USDA RS is approximately $150,000.

User rates are anticipated to service debt incurred to complete the 1–5-year Capital Improvement Plan. All priority projects total $670,000 and would require increasing quarterly user rates by approximately $36 per EDU to provide the estimated $50,000 annual 20-year debt service. If the District intends to incur debt for these projects, there are several programs available through Business Oregon that could serve the District well.

Routing maintenance tasks and deferred maintenance tasks listed in this report should be funded in the annual operating budget. The maintenance budget line item will likely need to be increased to ensure all maintenance can be completed as soon as possible.

APPENDICES

A. NPDES Permit

B. Video Inspection Reports