ATTACHMENTS

BOARD OF WATERWORKS COMMISSIONERS - 3:30 PM - (Monday, September 21, 2020)
Generated by Joe Trueblood on Friday, September 25, 2020

Members present: Gerald Van De Kreeke, President; Mark Smith, Secretary; Tom Howe, Member

Staff present: Joe Trueblood, Superintendent

1. OPENING OF MEETING
1.1 Pledge of Allegiance
All present honored the flag.

2. MINUTES
2.1 Approval of minutes from the August 17, 2020 meeting
Commissioner Smith made a motion, seconded by Commissioner Howe, to approve the minutes from the August 17, 2020 meeting. Motion passed unanimously.

3. REPORTS
3.1 Financial reports
Superintendent reviewed the financial reports prepared by Utility Accountant Gottsacker. Commissioner Smith made a motion, seconded by Commissioner Howe, to accept the financial reports as presented. Motion passed unanimously.

3.2 Superintendent's report including operations, construction-maintenance, and customer relations/fiscal
Superintendent reviewed the reports submitted by the departmental supervisors, noting that water production was up by 2% in August compared to August 2019. Commissioner Smith made a motion, seconded by Commissioner Howe, to accept the report as presented. Motion passed unanimously.

4. ITEMS PREVIOUSLY HELD OVER FOR DISCUSSION AND POSSIBLE ACTION
4.1 Raw Water Improvements project
Superintendent advised that CDM Smith is nearing completion of preliminary engineering work. The probable opinion of construction cost determination came in significantly higher than the initial project construction target of $29M, and so a number of cost-reduction items are now under consideration. This will likely include elimination of the emergency backup intake, reduction of the building footprint by eliminating chem feed and rest room, shifting from a circular to rectangular shore well, movement of the building location to avoid hill and storm sewer disruption, and various other considerations. Superintendent reviewed the process as a matter of filtering out what we can afford from what we would like to have in the facility. The key aspect is to provide a new, primary water intake pipeline and pumping station to the community. This pipeline should supply ample water and be less susceptible to winter ice buildup. The station should also accommodate pumping raw water to a remote plant location in the future. With all of the considerations in mind, maintenance of the existing two intake pipelines and low lift pumping stations becomes a critical part of the planning. The two current intakes would serve as the backup to the new primary intake, and these would also require maintenance of all or a large part of the existing low lift station. Superintendent stated that the emergency intake could be included as an alternate item to review if bids were to be extremely favorable. However, the existing 1959 intake does have some working lifetime left, and the old shorewell and the 1919 intake remain serviceable for the short term of something like 10-20 years, at which time a second intake pipeline could be constructed. Superintendent indicated that an update meeting will take place soon with City park officials to review the plan and discuss impacts to the small area of Vollrath Park affected by the existing easement for the facility. After that meeting, Superintendent anticipates CDM Smith would make a presentation to the Board. Meanwhile Utility staff have been reviewing possible FEMA BRIC funding with WDNR and others as regards $1-$3M in shoreline protection costs for the project. In addition, staff continues working to complete the WDNR ITA/PERF submittal ahead of the Oct. 31, 2020 deadline. Staff also participated in a meeting with WI DOA, WI PSC, and WI DNR regarding the possibility of a 30 year Safe Drinking Water loan. Initial indications are that, due to the 100 year lifetime of the raw water project, state staff would support a longer term SDWL of 30 years. This would help in spreading cost over more years and should somewhat reduce rate impact. Nonetheless, major infrastructure replacement is costly and will impact rates going into the future.

5. ITEMS FOR DISCUSSION AND POSSIBLE ACTION
5.1 Review and grant authority to Superintendent to execute Stonebrook Crossing development agreement
Superintendent distributed a copy of the Agreement to the Board members; it had been provided by City Attorney Adams. Superintendent reviewed the key elements related to the Water Utility which include the developer paying directly for water infrastructure rather than using the assessment process, an upcharge if the Utility determines water mains larger than 8" are needed, and a corner lot that is too small for assessments. The Commissioners reviewed the location of the development and felt the Agreement was in the best interests of the Utility.

Commissioner Van De Kreeke made a motion, seconded by Commissioner Smith, to grant authority as stated to the Superintendent. Motion carried unanimously.

5.2 Request approval of annual intake diving and cleaning proposal
Superintendent reviewed three proposals for the Utility's annual intake inspection and cleaning services. Underwater Construction Corp proposed at $8,890.00; Northern Diving USA at $21.200.00; and Midco Diving at $23,385.00. Superintendent stated that UCC has done outstanding work recently for the Utility. Commission Smith made a motion, seconded by Commissioner Van De Kreeke, to accept the low cost proposal from UCC at $8,890.00. Motion carried unanimously.

5.3 Request approval to purchase water meters
Superintendent reviewed quotes from Badger meter for a large 8" fire meter for the new hospital (second connection) at $14,161.95, along with various 3" meters for stock, at a total of $31,331.56 including the 8" meter. Commissioner Van De Kreeke made a motion, seconded by Commissioner Smith, to approve the purchase. Motion carried unanimously.

6. PERSONNEL
Superintendent noted that a number of staff members have had contact with someone who tested positive for covid, and this is considered an immediate or primary contact. In some cases, there has been a secondary contact involving a family who had been in contact with someone who tested positive. In the first case, the Utility is maintaining the need to quarantine for 14 days following the contact point. In the second case, more consideration is given to the details of the contact. Superintendent reiterated that some staff remain on alternating remote work as feasible, and the Utility remains committed to providing a safe work environment to all staff throughout the pandemic. An in-house flu clinic by Aurora will be offered in early October.

7. NEXT MEETING
7.1 Next meeting will take place on Monday, October 19, 2020, at 3:30 PM.

8. ADJOURN
8.1 Motion to Adjourn
Commissioner Smith made a motion, seconded by Commissioner Howe, to adjourn the meeting at 4:10 PM. Motion carried unanimously.

City of Sheboygan
spirit on the lake Water Utility

REPORT OF BILLING

SEPTEMBER 2020

		2020	2019	Increase or (Decrease)
Quarterly Metered*				
(Dist I - north of Superior Ave)	Residential	225,642.45	221,298.55	4,343.90
	Multi-Family	16,802.70	15,514.47	1,288.23
	Commercial	15,018.89	13,214.74	1,804.15
	Industrial	456.00	698.90	(242.90)
	Public	7,223.24	7,858.10	(634.86)
	Subtotal	**265,143.28**	**258,584.76**	**6,558.52**
Public Fire Protection		63,295.76	62,940.77	354.99
Flat Rate		27,784.22	27,497.24	286.98
Monthly Metered		363,272.96	351,264.37	12,008.59
Sheboygan Net		**719,496.22**	**700,287.14**	**19,209.08**
Sheboygan Falls		61,798.68	48,951.80	12,846.88
Kohler		28,599.96	30,319.44	(1,719.48)
Total		**809,894.86**	**779,558.38**	**30,336.48**

* *Billing for scheduled district only for the three preceding months usage.*

Total accumulative billing for 2020 is $6,150,753.88. A decrease of $443,380.27 from 2019 accounted for as follows:

	2020-Total Year to Date
Sheboygan	(447,436.67)
Sheboygan Falls	37,627.08
Kohler	(33,580.68)
	(443,390.27)

Total bills mailed September, 2020: 6,952

Residential	6,240				
Multi-Family	85	Multi-Family	3		
Commercial	219	Commercial	17		
Industrial	8	Industrial	64		
Public	31	Public	8	Fire Protection	277
Quarterly	**6,583**	**Monthly**	**92**	**Flat Rate**	**277**

City of Sheboygan
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RETURN ON RATE BASE

September 30, 2020

Add 2 YR Average	**SEPTEMBER 2020**	**SEPTEMBER 2019**
Utility Plant Balance	$ 65,892,608	$ 62,802,024
Materials and Supplies Inventory	$ 323,160	$ 295,404
Less 2 YR Average		
Reserve for Depreciation	$ 21,813,494	$ 20,370,780
Customer Adv for Const	$ -	$ -
Average Rate Base	$ 44,402,274	$ 42,726,647
Net Operating Income YTD	$ 1,076,300	$ 1,519,723
Net Operating Income As a Percent of Average Net Rate Base	**2.42%**	**3.56%**

Rate base is calculated using the two year average balance in the following accounts:
Utility Plant Balance - includes all capital assets less any contributed capital assets.
Materials and Supplies Inventory - includes all materials and supplies on hand and in inventory.
Reserve for Depreciation - includes depreciation on capital assets less any contributed capital assets.

City of Sheboygan Water Utility
spirit on the lake

CASH RESERVE

September 30, 2020

Ending balance on report for August 31, 2020		10,215,148.35
Plus:	Receipts	589,829.23
	Misc Receipts (includes stop loss reimbursements)	13,922.67
	Direct Pay Receipts	278,720.14
	Money Market/CDARs Investment Interest	1,777.40
Minus:		
	Disbursements - vendors and payroll	(694,004.56)
	Bank Service Fees Credit	(773.32)
	Health & Dental Claims/Adm Costs	(130,358.88)
	NSF Checks & Customer Refunds	(1,371.98)
	PSN Deposit Fees	(251.17)
	Reallocate Sewer/Garbage - payments	57.53
	Reallocate Sewer/Garbage - monthly	(582.33)
	Payroll - WRS in Transit	21,382.84
	Cardmember Services	(2,535.04)
	Postage	(4,072.67)
	Utility Water Payments	(1,241.31)
Ending Balance	**September 30, 2020**	**$ 10,285,646.90**

Note: The above amount includes:

Bond Reserve Fund	706,626.79
CD Investment Account - 12 month	1,046,300.15
CD Investment Account - 12 month	-
CD Investment Account - 6 month	500,394.64
CD Investment Account - 6 month restricted	2,001,490.85
Money Market Investment	2,422,455.32
Health Insurance Restricted Reserve	380,000.00
BAN Funds for Construction	496,260.00
Total	**$ 7,553,527.75**

General Unrestricted Operating Cash 2,732,119.15

City of Sheboygan
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STATEMENT OF NET POSITION
SEPTEMBER 30, 2020 AND 2019

Assets and Other Debits Utility Plant	Year to Date 2020	Year to Date 2019
Utility Plant	75,066,554	71,051,660
Depreciation- Utility Plant	24,293,544	22,730,864
Net Utility Plant	$ 50,773,010	$ 48,320,796
Other Property and Investments		
Appropriated Funds	496,260	149,888
Bond Redemption Fund	706,627	706,627
Net Pension Asset[1]	-	387,084
Deferred Outflow - Pension & OPEB [1]	1,262,190	729,101
Total Other Prop & Investment	$ 2,465,077	$ 1,972,700
Current and Accrued Assets		
Cash & Investments	9,083,510	7,691,366
Accounts Receivable	1,406,224	1,381,345
Grant Receivable - Restricted[2]	12,500	7,500
Materials & Supplies Inventory	339,525	306,795
Prepaid Expenses	31,441	44,807
Total Current & Accrued Assets	$ 10,873,200	$ 9,431,813
Total Assets and Debits	**$ 64,111,287**	**$ 59,725,308**

Liabilities and Other Credits	Year to Date 2020	Year to Date 2019
Proprietary Capital		
Capital Paid by Municipal	1,640,701	1,640,701
Unapprop. Earned Surplus	45,549,527	43,562,461
Total Proprietary Capital	$ 47,190,228	$ 45,203,162
Bonds, Loans & Advances	13,677,170	11,606,505
Total Long Term Debt	$ 13,677,170	$ 11,606,505
Current & Accrued Liabilities		
Accounts Payable	100	5,192
Accrued Liabilities	1,016,227	1,001,565
Total Current & Accrued Liab.	$ 1,016,327	$ 1,006,757
Deferred Credits		
Bond Premium	229,930	272,791
Pre 2003 Depr on Contributed Assets	81,638	106,772
	$ 311,568	$ 379,563
Operating Reserves		
Net Pension & OPEB Liability[1]	275,425	299,388
Deferred Inflow - Pension & OPEB [1]	1,103,698	766,023
Accrued Vac & Sick Leave	536,872	463,911
Total Operating Reserve	$ 1,915,995	$ 1,529,322
Total Liab & Other Credits	**$ 64,111,287**	**$ 59,725,308**

[1] See full audited Financial Statements for disclosures and details regarding pensions and OPEB.

[2] Grants Receivable - Restricted pertains to the Lead Water Service Lateral Replacement Program funded by the DNR.

City of Sheboygan
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STATEMENT OF REVENUE, EXPENSES AND CHANGES IN NET POSITION

SEPTEMBER 30, 2020 AND 2019

	2020 MONTH	2020 YTD	2019 MONTH	2019 YTD	Incr (Decr) YTD	% Incr/Decr YTD
Sales Revenue[1]	$ 817,673	$ 5,872,525	$ 787,657	$ 6,345,125	$ (472,601)	-7.45%
Other Water Revenue[2]	$ 5,160	$ 77,644	$ 4,806	$ 38,760	$ 38,884	100.32%
Total Operating Revenues	$ 822,833	$ 5,950,168	$ 792,463	$ 6,383,885	$ (433,717)	-6.79%
Operating Expenses[3]	296,382	2,391,149	279,060	2,450,300	(59,151)	-2.41%
Maintenance Expenses[4]	44,812	433,832	51,565	456,809	(22,976)	-5.03%
Depreciation Expenses[5]	126,491	1,155,848	115,788	1,059,996	95,851	9.04%
Taxes	101,519	893,039	106,740	897,059	(4,019)	-0.45%
Total Operating Expenses	$ 569,204	$ 4,873,868	$ 553,151	$ 4,864,163	$ 9,705	0.20%
Utility Operating Income	$ 253,629	$ 1,076,301	$ 239,312	$ 1,519,723	$ (443,422)	-29.18%
Other Income & Expense						
Non-operating Grant Revenue	-	35,450	-	82,627	(47,177)	
Non-Operating Grant Expenses	-	(35,450)	-	(82,627)	47,177	
Bond Premium	2,989	25,653	2,739	24,654	999	
Interest Earned on Investments	2,003	39,230	4,892	56,765	(17,534)	
Contributions	-	-	-	-	-	
Other Expense	-	(34,475)	-	-	(34,475)	
Misc Amortization	2,094	18,850	2,094	18,850	-	
Bond Interest Expense	(28,214)	(244,527)	(26,368)	(237,949)	(6,578)	
Change in Net Position	**$ 232,501**	**$ 881,032**	**$ 222,670**	**$ 1,382,043**	**$ (501,010)**	

[1] The decrease in Sales Revenue is due to a decrease in usage among industrial, commercial and public authority customers related to economic conditions caused by the on-going health emergency. Usage has improved in recent months, but remains below 2019 levels.

[2] The increase in Other Water Revenues includes a class action settlement pertaining to the purchase of liquid alum over a number of years and connection fees for a large southside development, part of which was remitted to Sheboygan County in August 2020.

[3] The decrease in Operating Expense is due to a decrease in usage, resulting in a decrease in electricity and pumping expense; a decrease in medical expense in 2020; and a prorated rate correction in 2019.

[4] The decrease in Maintenance Expense is due to less pump maintenance at GAPS in 2020, and less treatment equipment, structures, and hydrant maintenance in 2020.

[5] The increase in Depreciation Expense is due to the capitalization of the Horizon water tower, including new infrastructure at the SouthPointe Enterprise Campus.

City of Sheboygan
spirit on the lake Water Utility

APPROVAL OF VOUCHERS

September 30, 2020

Total Of The General Vouchers	$	542,943.41
Gross Payroll	$	158,988.72
Net Payroll	$	98,107.28

BOARD OF WATER COMMISSIONERS

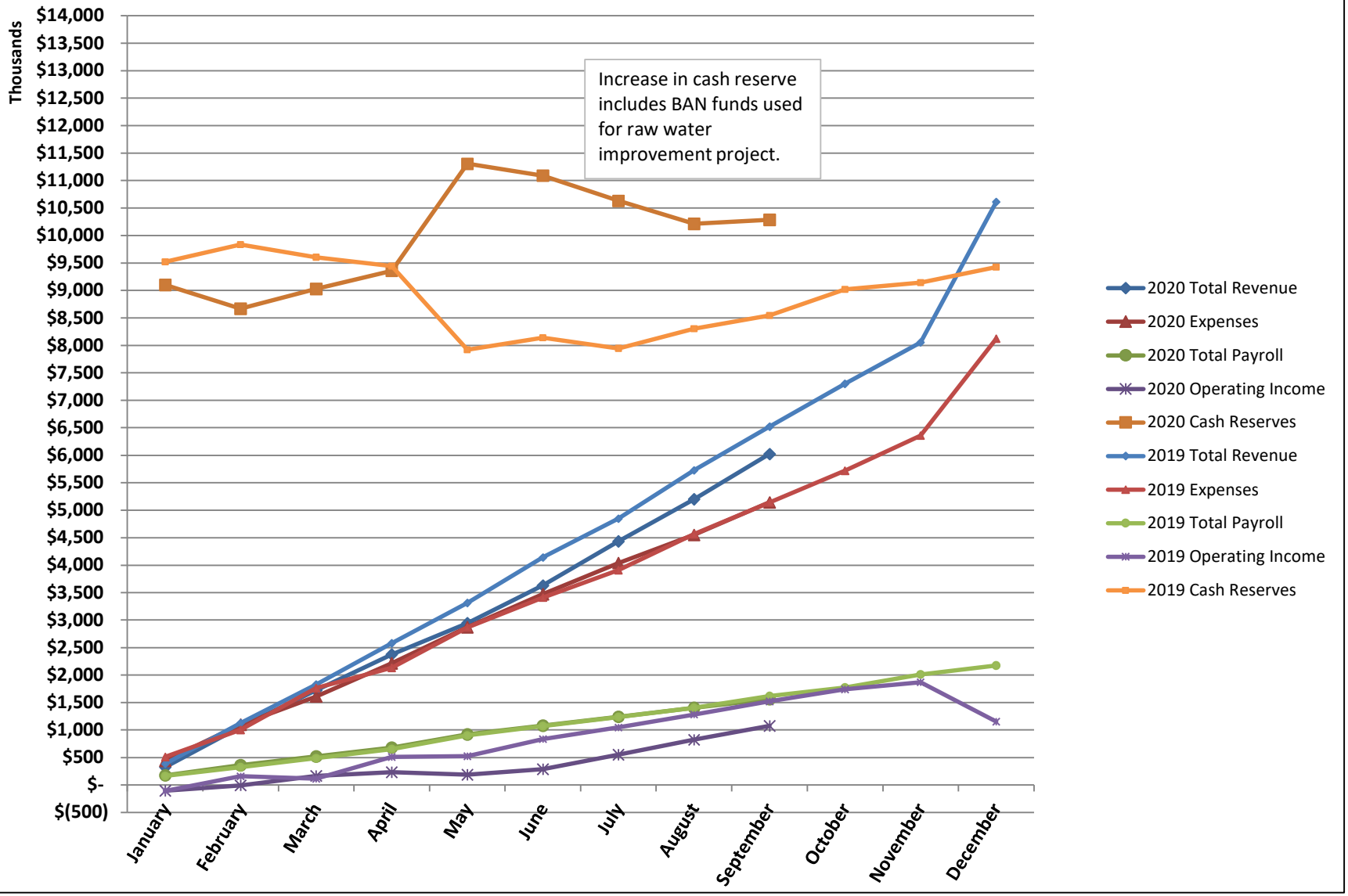
PRESIDENT

SECRETARY

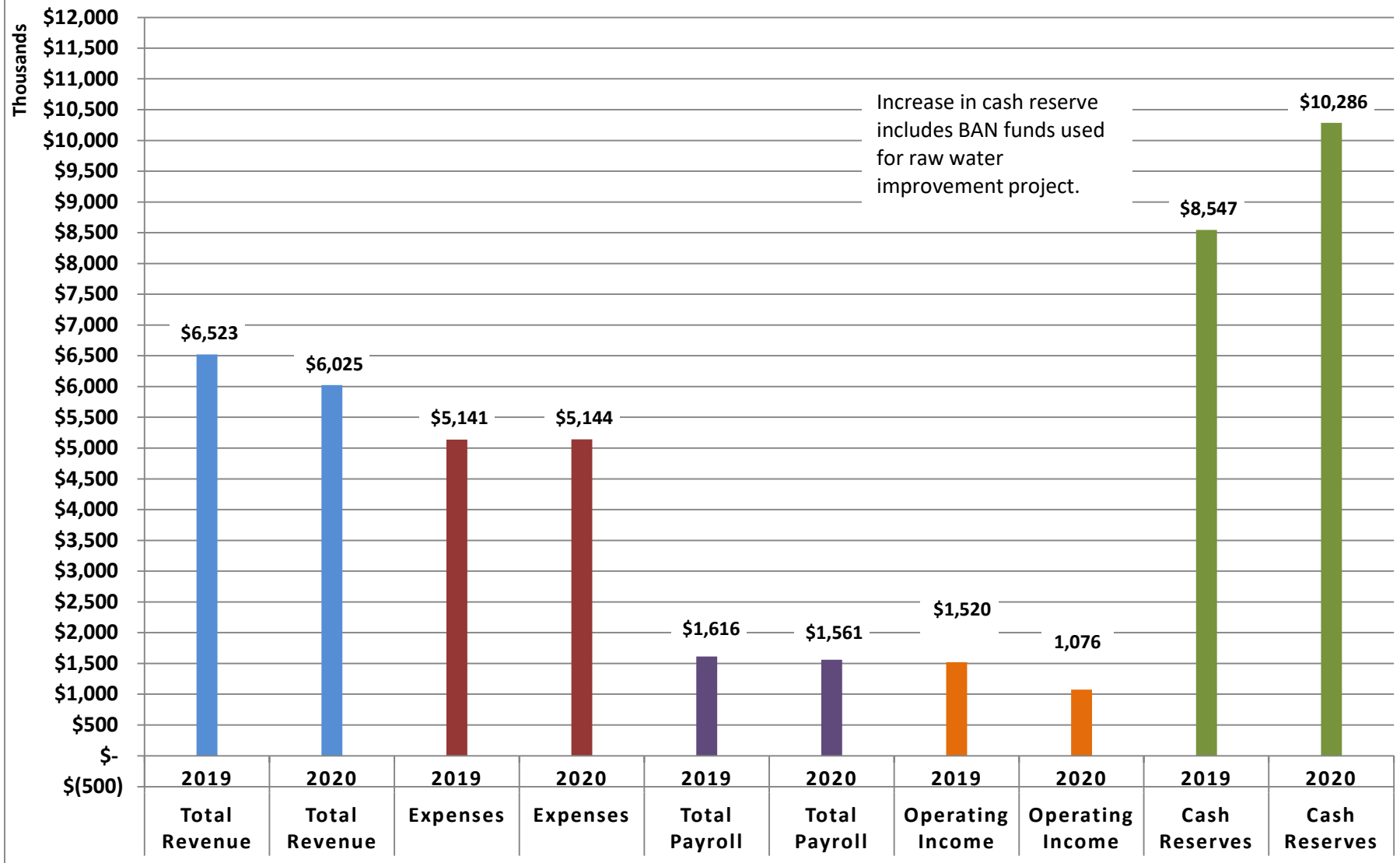
MEMBER

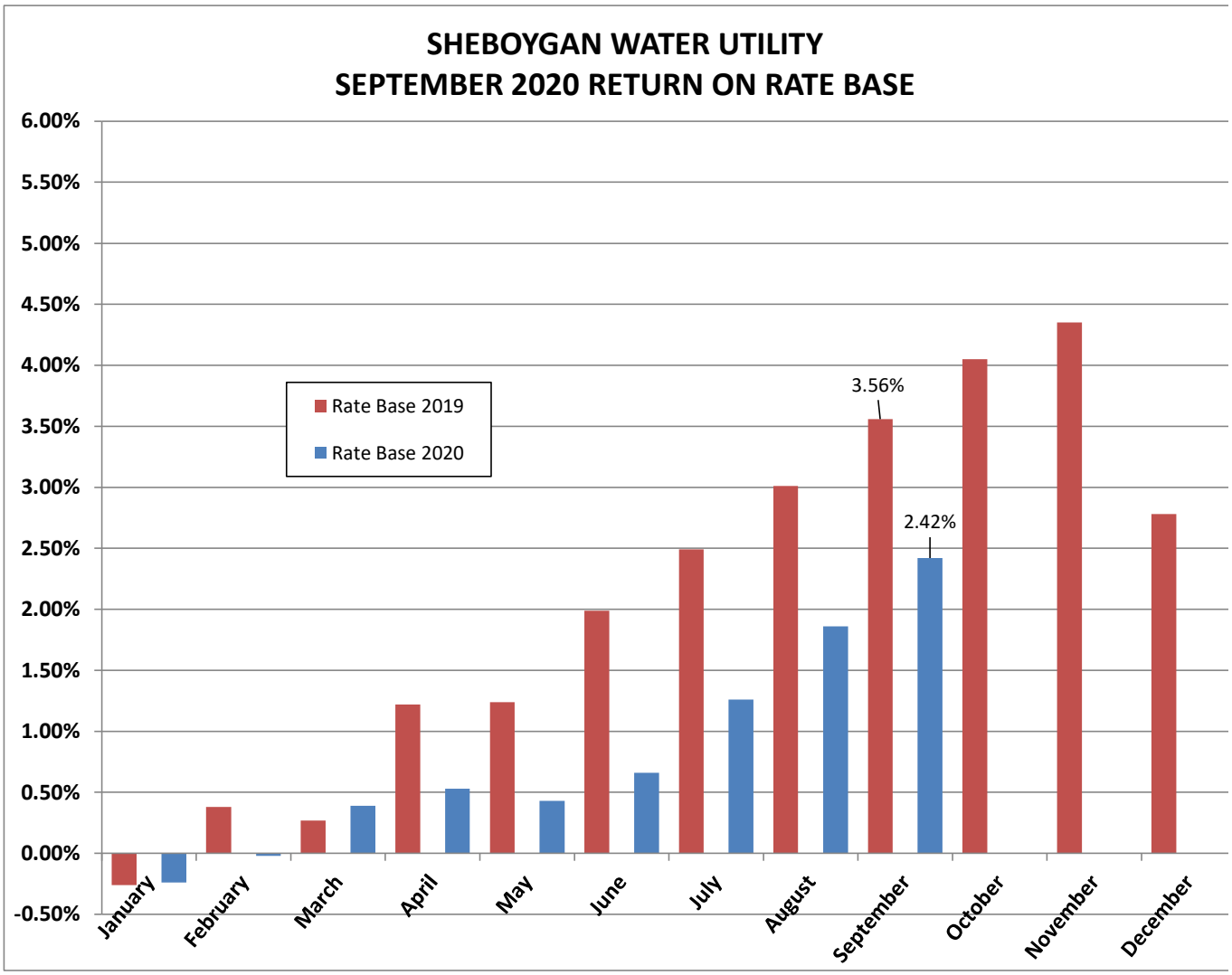
SUPERINTENDENT

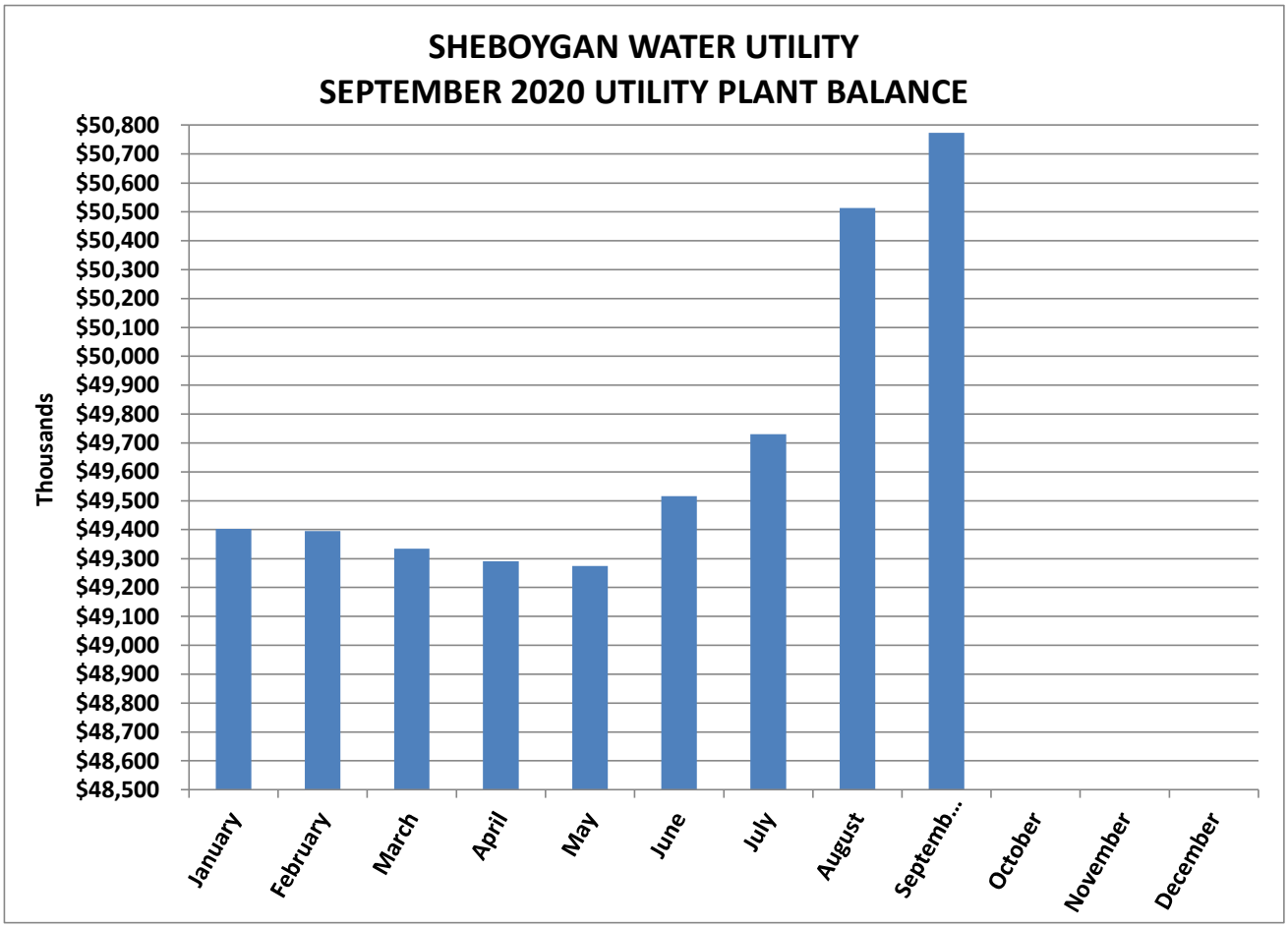
SHEBOYGAN WATER UTILITY
SEPTEMBER 2020 MONTHLY FINANCIAL TREND



SHEBOYGAN WATER UTILITY
SEPTEMBER 2020 YTD FINANCIAL POSITION




SHEBOYGAN WATER UTILITY
SEPTEMBER 2020 RETURN ON RATE BASE
6.00%
5.50%
5.00%
4.50%
4.00%
3.50%
3.00%
2.50%
2.00%
1.50%
1.00%
0.50%
0.00%
-0.50%
Rate Base 2019
Rate Base 2020
3.56%
2.42%
January
February
March
April
May
June
July
August
September
October
November
December


SHEBOYGAN WATER UTILITY
SEPTEMBER 2020 UTILITY PLANT BALANCE
Thousands
$50,800
$50,700
$50,600
$50,500
$50,400
$50,300
$50,200
$50,100
$50,000
$49,900
$49,800
$49,700
$49,600
$49,500
$49,400
$49,300
$49,200
$49,100
$49,000
$48,900
$48,800
$48,700
$48,600
$48,500
January
February
March
April
May
June
July
August
Septemb...
October
November
December

Customer Relations & Fiscal Summary

Utility Bills

Mailed 5935

Emailed 1949

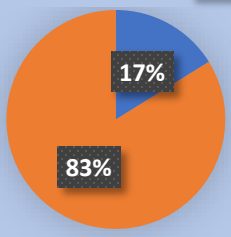
Payment Transactions

Electronic 3,527

Cash & Check 3,137

6,664
Total Number of Payments Processed

19
Payments Returned Not Honorable



Auto-Pay
One Time

Collections

District 2 *Suspended Disco Program due to Public Health Emergency

$ 961,289
Billed

$194,994
Outstanding After Due Date

976
Past Due Letters Mailed

0
Properties Disconnected

$111,828
Outstanding At Month End

	Sept 2019	**Sept 2020**
Payment Window	697	**463**
Drop Box Payments	247	**263**
Electronic Payments	3457	**3527**
Cash/Check Payments	2505	**2411**
Total Payments	6906	**6664**

Customer Service

	Sept 2019	**Sept 2020**
Answered Calls	1503	**1343**
Account Transfers	248	**260**
Property Data Requests	98	**104**

PSC Complaints

0 PSC Complaint(s) Filed

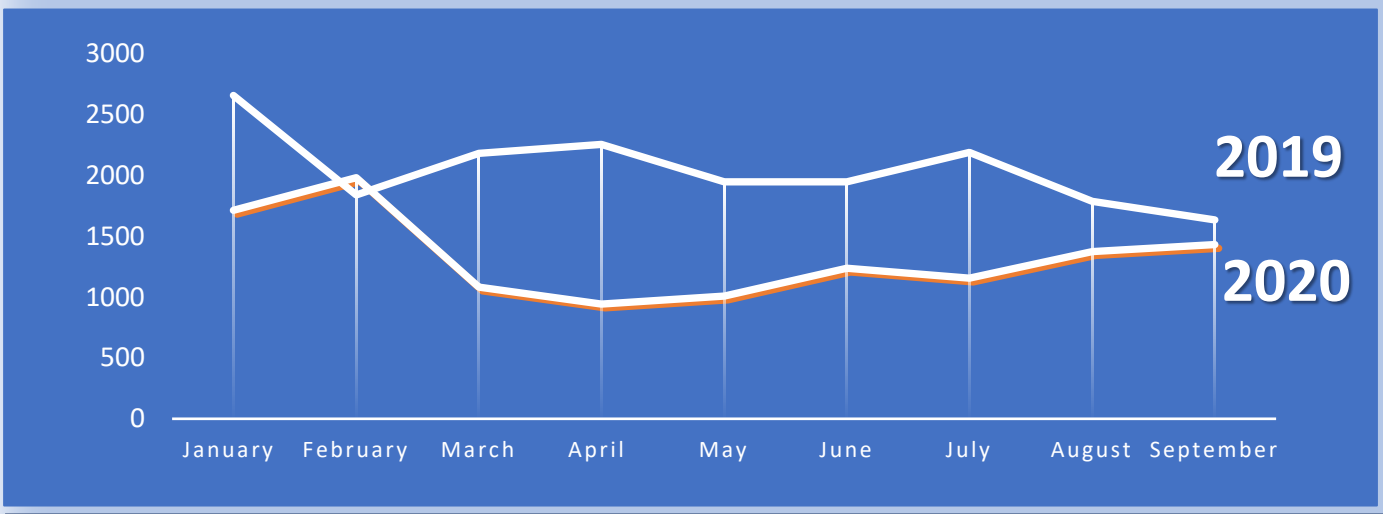
Accounts Payable

222 Invoices Paid

September 2020

Customer Relations & Fiscal Summary

Service Tech Miles Driven



Cross Connection

25 Inspections

*Commercial/Industrial CCC Program started back up in June 2020. Previously suspended due to COVID-19.

Leak Allowance

1 Customer Requests **170** CCF Allowed @ Reduced Rate

Service Leaks

2 New Reported Leaks

0 Leaks Fixed

2 Active Leak(s) Month End

Meters

48 Meters Installed/Replaced

52 Meters Tested

September 2020

Customer Relations & Fiscal Summary

Facebook Page

10 September New Followers

657 Total Followers

Website Visitors

2,477

2019 Visits in September: 2,490

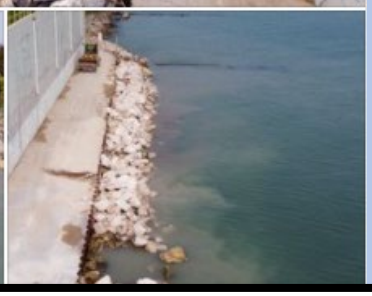
Top Page Viewed: **Pay Your Bill**

Most Impressionable Facebook Posts

Sheboygan Water Utility
Published by Tamara Mae · September 18 at 1:29 PM ·

Distribution Techs have been meticulously working on shoreline protection this week. Working under WDNR permit, the Techs are installing large rocks along the shoreline. The new rocks are replacing smaller rocks that have washed away over the past several decades. The large rocks play a crucial role in protecting the filter plant from high lake levels.

Note: the spray paint on the basin wall is not graffiti 😉. These marks are for an upcoming concrete restoration project.



2,060	487	Boost Post
People Reached	Engagements	

Scott Combs, Suzanne Baumann and 17 others — 1 Comment 6 Shares

Sheboygan Water Utility
Published by Tamara Mae · September 28 at 3:29 PM ·

Stripped, primed, and ready for the first coat! Check out the progress photos of the Georgia Avenue Standpipe Project https://bit.ly/3kWstEY

1,115	130	Boost Post
People Reached	Engagements	

Rene Post, Dave Sartori and 9 others — 3 Shares

September 2020

Additional CR/F Activities September

- Disconnection program for nonpayment is suspended due to public health emergency. The moratorium on disconnections was extended by the PSC to November 1.
- The USS continue to rotate their schedule in the office on teams of two.
- Service Techs continue meter change outs and testing for commercial and industrial accounts.
- The residential radio read (Orion) installation program is on hold due to the pandemic. We have approximately 1,100 Orions to install to complete the program.
- Preparation work was completed by the USS in the billing software to prepare rates for the rate change effective October 1, 2020.

September 2020

MONTHLY CONSTRUCTION-MAINTENANCE DEPARTMENT REPORT

September 2020

Distribution System Maintenance:

- Concrete restoration on the Saemann Avenue water main replacement project.
- Aided in necessary shut-downs for the Geele Avenue water main replacement project.
- Customer water service reconnects for the Saemann Avenue project.
- Placed stone along the shoreline to aid in shoreline protection and restoration.
- Aided contractor in turning valves and repairing a water main break on the new hospital project.
- Valve replacement at N. 22nd Street and Cooper Avenue.
- Repaired water main break on 16" transmission main behind Biolife.
- Repaired water main breaks at S. 19th Street and Humbolt Ave, and two at S 22nd Street and Custer/Mead Avenues.
- Replaced a valve at Mead Avenue and South 22nd Street.
- Saw cut and made repairs to water main break service holes.
- Hauled in fill to replenish stock.

Water Quality:

- Maintained and calibrated distribution system auto-flushers.
- Completed weekly/monthly dead-end water quality flushing.

Taps:

- 6" tap for a future second service to the new Badger Lofts Apartment Complex.
- 1" tap at 1623 N. 24th St.

Building/Grounds Maintenance:

- General shop maintenance and cleaning.
- Clean up of debris and fencing behind the Filter Plant.

Equipment Maintenance:

- Performed routine maintenance and repairs on construction equipment and vehicle fleet.

Distribution System -- September 2020

Street Valves and Hydrant Valves Installed (including water main projects and others)

Location	Date Installed	Size ("), Jt	Installed By	Type
N. 19th St and Geele Ave	9/2/2020	6" MJ	Domer Inc.	G (vert)
Saemann Ave at N. 23rd St (S)	9/10/2020	6" MJ	ute.	G (vert)
N. 22nd St and Cooper Ave (S)	9/25/2020	6" MJ	ute.	G (vert)
N. 20th St and Mead Ave	9/29/2020	6" MJ	ute.	G (vert)
S. Taylor Drive and Union Ave (SW)	9/30/2020	12" Inserta	DiTomasini	G (vert)

Total Valves Installed = 5

Street Valves and Hydrant Valves Removed

Location	Installed	Removed	Type
Cooper Ave. 300' E. of N. 20th St. (S)	12/31/1924	9/1/2020	
N. 23rd St. at Saemann Ave. (S)	8/1/1973	9/10/2020	G
N. 22nd St. at Cooper Ave. (S)	12/31/1928	9/25/2020	G
S. 20th St. at Mead Ave. (S)	8/19/1965	9/29/2020	

Total Valves Removed = 4

Street Valves and Hydrant Valves Abandoned

Location	Installed	Abandoned
N. 19th St. ~31' S. of c.l. Geele Ave.		9/2/2020

Total Valves Abandoned = 1

Street Valves and Hydrant Valves Maintained

Location	Maintained	Size

Total Valves Maintained = 0

Hydrants Installed (including water main projects and others)

Location	Installed	Tr Size	Valve	By
Geele and N.19th St. (SE)	9/2/2020		y	Domer, Inc.

Total Hydrants Installed = 1

Hydrants Removed (including water main projects and others)

Location	Installed	Removed	Hyd Valve?
N. 19th St. at Geele Ave. (SE)	11/16/1973	9/2/2020	n

Total Hydrants Removed = 1

Hydrants Abandoned (including water main projects and others)

Location	Installed	Abandoned	Tr Size	Hyd Valve?

Total Hydrants Abandoned=0

Hydrants Maintained/Moved (including water main projects and others)

Location	Installed	Maintained

Total Hydrants Maintained/Moved = 0

Water Main Breaks

Location	Date	Size
16" transmision main from GAPS. North of Biolife	9/16/2020	16"
S. 19th St and Humboldt	9/25/2020	6"
S. 20th St and Mead Ave	9/25/2020	6"
S. 20th St and Mead Ave	9/25/2020	6"

Total Water Main Breaks = 4

SUMMARY

Number of feet of 4 inch water main installed	0.0	water main
Number of feet of 6 inch hydrant lead installed	23.6	
Number of feet of 6 inch water main installed	21.0	
Number of feet of 8 inch water main installed	447.3	
Number of feet of 12 inch water main installed	0.0	
Number of feet of 16 inch water main installed	0.0	
Number of feet of 20 inch water main installed	0.0	
Number of feet of 24 inch water main installed	0.0	
Number of feet of water main abandoned or removed	468	
Number of water main breaks repaired	4	
Number of hydrants installed	1	hydrants
Number of hydrants removed or abandoned	1	
Number of hydrants maintained or moved	0	
Number of street valves installed	4	valves
Number of hydrant valves installed	1	
Number of street valves removed or abandoned	5	
Number of hydrant valves removed or abandoned	0	
Number of valves maintained	0	
Number of water connections installed	2	

WATER MAIN AND APPURTENANCES INSTALLATION -- September 2020

Water Main Projects (including installation or abandonment of more than 3' of pipe by utility or contractors)

Location: 6" Water Main	Installed	WO	New Valves	New Hyd.	New Hyd Valves	Aband. Valves	Aband. Hyd.	Remove Hyd.	Size " Installed	Feet Installed	New Hyd Lead	Size Aband.	Feet. Aband.	Feet. Rem.	By
Saemann Ave from N. 21st St to N. 22nd St	9/10/2020	20015-1	0	0	0	0	0	0	6	10	0	6" CIP	10	0	Ute.
N. 19th St and Geele Ave Tie in	9/2/2020	19035-1	0	0	0	0	0	0	6	5	0	6" CIP	5	0	Dorner, Inc.
N. 22nd St and Geele Ave (North Tie in)	9/2/2020	19035-1	0	0	0	0	0	0	6	6	0	6" CIP	6	0	Dorner, Inc.
Totals:			**0**	**0**	**0**	**0**	**0**	**0**		**21**	**0**		**21**	**0**	

Location: 8" Water Main	Installed	WO	New Valves	New Hyd.	New Hyd Valves	Aband. Valves	Aband. Hyd.	Remove Hyd.	Size " Installed	Feet Installed	New Hyd Lead	Size Aband.	Feet. Aband.	Feet. Rem.	By
Saemann Ave from N. 21st St to N. 22nd St	9/10/2020	20015-1	2	1	1	1	0	0	8	390.0	15	6" CIP	390	0	Ute.
N. 19th St and Geele Ave Tie in	9/2/2020	19035-1	0	1	1	0	0	1	8	22.0	8.6	6" CIP	22	0	Dorner, Inc.
N. 22nd St and Geele Ave (North Tie in)	9/2/2020	19035-1	0	0	0	0	0	0	8	0.5	0	6" CIP	0	0	Dorner, Inc.
N. 20th St and Geele Ave North Tie in	9/1/2020	19035-1	0	0	0	0	0	0	8	34.8	0	8" CIP	35	0	Dorner, Inc.
Totals:			**2**	**2**	**2**	**1**	**0**	**1**		**447.3**	**23.6**		**447**	**0**	

September 2020

OPERATIONS' DEPARTMENT MONTHLY REPORT

	HIGH LIFT		LOW LIFT		2020 VS 2019
PUMPAGE	**2019**	**2020**	**2019**	**2020**	HL
Total in MG	388.364	396.978	389.065	397.940	2.22%
Daily Average (MG)	12.526	13.253	12.969	13.265	
Max. Day (MG)	15.004	15.188	14.975	15.220	2020 VS 2018
					HL
Gal/KwH	1,229	1,121	5,159	4,905	-4.82%

ELECTRICAL COSTS					
	2019		**2020**		
A. Pumping:	**KwH**	**$**	**KwH**	**$**	
High Lift	314,969	$22,975.28	349,618	$23,800.84	
Low Lift	75,182	$5,484.10	80,559	$5,484.19	
Wash Pump 1	1,400	$102.12	2,100	$142.96	
Georgia St. Bstr.	53,100	$5,484.91	59,400	$5,336.49	
Wilgus Ave. Bstr.	3,000	$375.45	3,300	$356.21	
EE Pit / Bstr.	4,113	$494.45	5,730	$665.18	
Erie Ave. Bstr.	17,600	$2,370.97	0	$0.00	$/KwH
Sub Total	469,364	**$37,287.28**	500,707	**$35,785.87**	-10.0%
B. Treat./Fiscal/Misc.	**KwH**	**$**	**KwH**	**$**	
Office & Maint. Bldg.	11,748	$1,374.47	13,630	$1,553.36	
Filter Plant / Pump Station / 2nd Service	51,249	$3,738.36	27,323	$1,860.06	
					$/KwH
Sub Total	62,997	**$5,112.83**	40,953	**$3,413.42**	2.7%
C. Distribution:	**KwH**	**$**	**KwH**	**$**	
Taylor Hill Tank	198	$39.98	1,078	$142.34	
Kohler Meter Pit	0	$0.00	0	$0.00	
EE Tower	889	$121.26	1,139	$149.35	
Washington (PRV) Pit	257	$49.44	435	$72.07	
Sub Total	1,344	**$210.68**	2,652	**$363.76**	$/KwH
Total Electrical Costs	**533,705**	**$42,610.79**	**544,312**	**$39,563.05**	-9.0%
Electrical Cost / MG		$109.72		$99.51	

	2019		**2020**		
NATURAL GAS COSTS	CCF Used	Cost	CCF Used	Cost	
Production Facility	215	$131.88	469	$214.26	
South Basin	276	$281.18	68	$183.13	
Georgia St. Bstr.	22	$41.49			
Erie Ave. Bstr.	0	$29.59	4	$33.10	
Wilgus Ave. Bstr.	0	$16.77			
Office & Maint. Bldg.	308	$175.24	462	$211.48	$/CCF
Total Natural Gas Costs	821	**$676.15**	1,003	**$641.97**	-22.3%
Natural Gas Cost / MG		$1.74		$1.61	

	2019		**2020**		
CHEMICAL COSTS	Lbs. Used	Cost	Lbs. Used	Cost	
Alum	47,954	$6,905.38	55,665	$7,876.60	-1.7%
Carbon	0	$0.00	0	$0.00	#DIV/0!
Chlorine	8,099	$7,321.50	8,421	$6,888.38	-9.5%
Fluoride	1,829	$1,609.52	1,825	$1,606.00	0.0%
KMnO4	257	$938.00	319	$1,165.04	0.0%
Cationic Polymer	0	$0.00	0	$0.00	#DIV/0!
Liquid Phosphate	2,548	$3,235.96	2,839	$3,605.53	0.0%
Total Chemical Costs		**$20,010.36**		**$21,141.55**	5.7%
Chemical Cost / MG		$51.52		$53.18	

Grand Total	**$63,297.30**		**$61,346.57**	-3.08%
Total Cost / MG	**$162.98**		**$154.30**	-5.33%

YTD HL 2020 vs 2019	-8.25%	YTD HL HIGH DAY PUMPAGE	16.469	August 27, 2020
YTD HL 2020 vs 2018	-13.31%	YTD HL LOW DAY PUMPAGE	8.396	January 1, 2020

NOTE:

September Pumpage is up ~2.22%.

Operating report does not reflect "One-Time 2019 Fuel Credit based on 2019 Usage": $7,283.68

	YTD HL Ave Day
2020	11.685
2019	12.738
2018	13.487

COMPARATIVE SUMMARY OF PLANT OPERATIONS

September 2019 vs **September 2020**

Pumping Record

High Lift

	2019	2020	Diff.
Tot. Water in MG	388.364	396.978	2.22%
Daily Average	12.526	13.253	5.80%
Maximum Day	15.004	15.188	1.23%
Minimum Day	9.577	9.828	2.62%
By Natural Gas	1.187	5.675	378.10%
Power in KWH	314,969	349,618	11.00%
Gals. per KWH	1,229	1,121	-8.79%
Power $ / KWH	$0.07294	$0.06808	-6.67%
Power $ / MG	$59.16	$59.86	$0.70
Tot. Power $/MG	$109.98	$99.58	($10.40)

Low Lift

	2019	2020	Diff.
Tot. Water in MG	389.065	397.940	2.28%
Daily Average	12.969	13.265	2.28%
Maximum Day	14.975	15.220	1.64%
Minimum Day	9.664	9.717	0.55%
By Natural Gas	1.200	2.776	131.33%
Power in KWH	75,182	80,559	7.15%
Gals. per KWH	5,159	4,905	-4.92%
Power $ / KWH	----	----	----
Power $ / MG	$14.10	$13.78	($0.32)
Tot. Power $/MG	----	----	----

Treatment Chem. Lbs. Used

Total Lbs.	2019	2020	Diff.
Alum	47,954	55,665	16.08%
Carbon			#DIV/0!
Chlorine	8,099	8,421	3.98%
KMnO4	257	319	24.20%
Polymer	0	0	#DIV/0!
Liquid Phosphate	2,548	2,839	11.42%
Lb/ MG:			
Alum	123.3	139.9	13.49%
Carbon	0.0	0.0	#DIV/0!
Chlorine	20.8	21.2	1.66%
KMnO4	0.7	0.8	21.43%
Liquid Phosphate	6.5	7.1	8.94%

Cost

Total Cost	2019	2020	Diff.
Alum	$6,905.38	$7,876.60	$971.22
Carbon	$0.00	$0.00	$0.00
Chlorine	$7,321.50	$6,888.38	($433.12)
KMnO4	$938.05	$1,165.04	$226.99
Polymer	$0.00	$0.00	$0.00
Liquid Phosphate	$3,235.96	$3,605.53	$369.57
Cost / MG:			
Alum	$17.75	$19.79	$2.04
Carbon	#DIV/0!	#DIV/0!	#DIV/0!
Chlorine	$18.82	$17.31	($1.51)
KMnO4	$2.41	$2.93	$0.52
Liquid Phosphate	$8.32	$9.06	$0.74

Fluoride:	2019	2020	
Total Lbs.	1,829	1,825	-0.22%
mg/l applied as F	0.74	0.70	
Av. Res. Plt. Tap	0.72	0.73	

Fluoride:	2019	2020	
Cost	$1,609.52	$1,606.00	($3.52)
Cost/MG	$4.15	$4.05	($0.10)

Water Quality: Raw

	2019	2020
Turbidity	3.70	4.50
pH	8.08	8.20
Alkalinity	108.1	108.5
MF (E-Coli)	3.5	2.9
Temperature	48.5	50.7
Wash-H20 % /LL	1.65	1.71
Av. Flt. Run/hrs	122.1	116.9
Av. ROF / MG	1.44	1.45

TAP

	2019	2020
Turbidity	0.020	0.031
pH	7.57	7.62
Alkalinity	101.5	101.0
Plate Count	0.00	0.00
Colilert	0	0
Temp.	50.1	53.6
Cl Res.	0.88	0.91

Natural Gas:

	2019	2020	
Nat. Gas Heating	0	-84	Plant & South Basin
Nat. Gas Pumping	348	621	

	2019	2020	Diff.
	$199.84	$113.48	($86.36)
	$213.22	$283.91	$70.69

	CCF	Cost	**Natural Gas Cost**	**Natural Gas CCF**
#3 Gas Pump	111.6	$50.98	**$397.39**	**537**
#4 Gas Pump	235.4	$107.52		
#7 Gas Pump	122.5	$55.96		
Electric Generator	152.0	$69.44		
Pumping totals	**621.5**	**$283.91**		

September 2020

% Run		10/1/2020	9/1/2020	
	Elapsed Time:			
64.0%	No. 6 Pump	58,689.4	58,228.6	460.8
0.00%	Wash Pump Meter	5,025.46	5,025.46	0.00
0.7%	No. 7 Pump	684.3	679.4	4.9
1.3%	No. 8 Pump	59,475.3	59,466.3	9.0
98.2%	No. 9 Pump	5,199.0	4,492.0	707.0
1.9%	Wash Pump 2	681	667	14
	No. 1 Prime Pump	1,025.7	1,025.3	0.4
	No. 2 Prime Pump	1,087.0	1,086.4	0.6
Kw/Hr run	**Watthour Meters:**			
#DIV/0!	Wash Pump 1	1184.1	1181.1	2,100
59.4	No. 9 Pump	4637.87	4595.84	42,031
544.4	No. 8 Pump	6818.4	6804.4	4,900
73.0	No. 6 Pump	8340.3	8220.2	33,628
66.6	Wash Pump 2	70.301	69.524	932
539.9	No. 1 Pump	7620.577	7519.009	101,568
239.8	No. 2 Pump	4432.724	4411.069	21,655
287.5	No. 3 Pump	8115.423	8044.324	71,099
#DIV/0!	No. 4 Pump			0
550.5	No. 5 Pump	6,919.231	6,763.935	155,296
	Garage (MWatt/Hrs.)	1,013.27	1,011.43	1,840
	Power Co. (Step #3) Left Meter - OUTSIDE	28,846	28,463	459,600
	Volume Used:			
	Nat. Gas (Correct)	42,131,421	42,092,220	49,276
	Elapsed Time:			
	Emer. Generator	915.0	907.4	7.6
% Run	**Elapsed Time:**			
26.1%	No. 1 Pump	14,133.4	13,945.3	188.1
12.5%	No. 2 Pump	18,945.42	18,855.11	90.31
34.4%	No. 3 Elec. Pump	28,298.5	28,051.2	247.3
0.5%	No. 3 Nat. Gas Pump	466.4	462.8	3.6
0.0%	No. 4 Elec. Pump	0.00	0.00	0.0
0.7%	No. 4 Nat. Gas Pump	1,620.5	1,615.3	5.2
39.2%	No. 5. Pump	14,488.350	14,206.270	282.080
0.2%	UV Building Generator	82.5	81.2	1.3

		10/1/2020	9/1/2020	
SLUDGE	No. I Hour Meter	646.7	646.7	0
SYSTEM	No. 2 Mag Meter	8,225,490	7,982,810	242,680
	Recycle Meter (Reset to zero each month)			242,680

Power Cost	$0.0680767	Bill >>>>	$33,330.35	
	#DIV/0!	KWH >>>	489,600	
Init. Chg.	$31,288.05			Low L. KWH 80,559
	$	KWH		L.L. Cost $ $5,484.19
Kohler Pit				High L. KWH 349,618
Horizon	$28.24	73		H.L. Cost $ $23,800.84
Taylor	$142.34	1,078		
ALT. 72 Park				Total Cost $29,285.03
Geo. Ave.	$5,336.49	59,400		
Wilgus Ave.	$356.21	3,300		
EE Pit	$665.18	5,730		
EE Tower	$149.35	1,139		Plant Costs $1,860.06
Washington	$72.07	435		
Office	$1,553.36	13,630		
Erie Ave.				
Total	$39,591.29	544,385		

SUMMARY

	HIGH LIFT		LOW LIFT	
	2019	2020	2019	2020
Tot. Pump	388.364	397.584	389.065	397.940
Daily Ave.	12.526	13.253	12.969	13.265
Max. Day	15.004	15.188	14.975	15.220
Min. Day	9.577	9.828	9.664	9.717
By Nat. Gas	1.187	5.675	1.200	2.776
Power KWH	314,969	349,618	75,182	80,559
Gals/KWH	1229	1121	5159	4905
Cost/KWH	$0.07294	$0.06808	*******	*******
Cost/MG	$59.16	$59.86	$14.10	$13.78
Tot. Cost/MG	$109.98	$99.58	*******	*******

HIGH LIFT DELIVERY QUARTERLY REPORT 2020

I. FIRST QUARTER	Jan - Feb - Mar			
		GALLONS	COST $	$/MG
	2019	1,111,503,000	$217,156.22	$195.37
	2020	1,061,714,000	$197,921.94	$186.42
	Percent Difference	-4.48%	-8.86%	-4.58%

II. SECOND QUARTER	Apr - May - Jun			
		GALLONS	COST $	$/MG
	2019	1,132,902,000	$192,754.83	$170.14
	2020	893,284,000	$159,034.60	$178.03
	Percent Difference	-21.15%	-17.49%	4.64%

III. THIRD QUARTER	Jul - Aug - Sep			
		GALLONS	COST $	$/MG
	2019	1,240,316,000	$202,724.19	$163.45
	2020	1,243,023,000	$192,566.59	$154.92
	Percent Difference	0.22%	-5.01%	-5.22%

IV. FOURTH QUARTER	Oct - Nov - Dec			
		GALLONS	COST $	$/MG
	2019	1,040,997,000	$204,391.07	$196.34
	2020	0	$0.00	#DIV/0!
	Percent Difference	-100.00%	-100.00%	#DIV/0!

YEAR TO DATE : 2020				
		GALLONS	COST $	$/MG
ELECTRICITY CHEMICALS NATURAL GAS	2019	4,525,718,000	$817,026.31	$180.53
	2020	3,198,021,000	$549,523.13	$171.83
	Percent Difference	-29.34%	-32.74%	-4.82%

YEAR TO DATE : 2020			
		GALLONS	COST $
SLUDGE DISPOSAL to WWTP	2019	5,430,249	$38,471.09
	2020	2,754,460	$21,068.78
	Percent Difference	-49.28%	-45.23%
STORM WATER CHARGES	2020	NA	$0.00

HIGH LIFT SYSTEM DELIVERY :			
	Maximum Pumpage Day	16,469,000	August 27, 2020
	Minimum Pumpage Day	8,396,000	January 1, 2020

	MG	$	$/MG
2019	4,525,718,000	$817,026.31	$180.53
2020	3,198,021,000	$549,523.13	$171.83

NOTE: Monthly sludge disposal costs do not reflect the current actual monthly sludge discharge total to date.
Filtrate discharges from Spring/Fall sludge disposal operations are included in treatment plant sludge disposal costs.
Spring/Fall basin sludge/residual solids volumes and disposal costs are contract work.
Sludge disposal costs are not included in $/MG.

Filter Plant Maintenance Completed For September 2020

Subject	StartDate	EndDate	Description
Georgia equipment	1-Sep-20		Picked up equipment from Georgia tank and brought back to filter plant
Maintenance paperwork	1-Sep-20		Maintenance paperwork
Cleaned common areas	1-Sep-20		Cleaned common areas and took out garbage
East alum injector	1-Sep-20		Removed and cleaned East alum injector, flushed line
Cleaned maintenance shop	1-Sep-20		Cleaned maintenance shop and put away tools
Distribution samples	2-Sep-20		Collected new distribution pipe samples
pH meter reagents	2-Sep-20		PH meter reagents in lab replaced
Front door Key Pad	2-Sep-20		Key pad missing screw, replaced
Dan Lab operations	3-Sep-20	3-Sep-20	Dan covered lab operations
Dan covered operations 2 hours	3-Sep-20	3-Sep-20	Dan covered operations for mark
Distro samples new service	3-Sep-20		Distro samples for new service line
Georgia pump flow meter	3-Sep-20		Georgia pump station flow meter needed lube and adjustment
Dan Covers 2nd Shift.	4-Sep-20	8-Sep-20	Joshua covers 2nd shift for Glen.
Labor day Holiday	7-Sep-20		Holiday
Dan off for coverage	10-Sep-20	11-Sep-20	Dan off for 2nd shift coverage for Glen.
Horizon Tower	14-Sep-20		Drop Rubatex and zero hypo meter; was .07 now .35.
Honold	14-Sep-20		Purchase/pickup Rubatex for Horizon.
Sample Sink	14-Sep-20		Clean filter hall sample sink.
Monday Meeting	14-Sep-20		Topics include raw water intake, shoreline stabilization, wash tank sensor, UV reference sensor, etc.
Wash Tank Sensor	14-Sep-20		Install new wash tank sensor assembly.
Maintenance Shop	15-Sep-20		Put tools away, clean counters, etc.
Potassium Display Diagnostic	15-Sep-20		Diagnose new display issue; unable to show in inches.
Potassium Digital Display	15-Sep-20		Install new digital display.
South Basin Influent Line	16-Sep-20		Flush south basin influent line, clean hypo meter, clean NTU meter, etc.
East Basin Alum Feed	16-Sep-20		Flush East basin alum feed.
Trillings	16-Sep-20		Purchase 12 new utility keyed locks.
Honold	16-Sep-20		Purchase ½ couplers, one union, and 20' of PVC.
South Basin Influent	16-Sep-20		Fabricate and install new South Basin influent flush point; 3 spears valves and insulation.
UV Major Alarm	17-Sep-20		Check West UV reactor major alarm.
UVT% Recalibration	17-Sep-20		Recalibrate UVT% meter.
Georgia Ave.	17-Sep-20		Begin pump 3 packing repair; cleaned drain line and fastener rust.
Georgia Ave.	17-Sep-20		Cement in 2 floor drains.
UV Reference Sensor	18-Sep-20		Enter UV reference sensor data.
UV Reference Sensor Check	18-Sep-20		Perform UV reference sensor check.
South Basin Effluent	18-Sep-20		Fabricate and install new south basin effluent sample manifold.
Menards	18-Sep-20		Purchase pipe insulation, ½" copper fittings, computer mouse, etc.
Dan vacation	21-Sep-20	28-Sep-20	Dan vacation

Yellow indicates days operating or running labs

Joshua Lab Operations	21-Sep-20	21-Sep-20	Joshua covering lab for Eric.
Monday Meeting	21-Sep-20		Topics include coverage, clear well gate, raw water improvement, pump station status, etc.
South Basin Influent	22-Sep-20		Begin fabricating new sample and flush points.
Filter 1-3	22-Sep-20		Clean NTU meter line and meters themselves: ortho and calcium buildup.
South Basin Influent	22-Sep-20		Install new south effluent hypo meter line and shutoff valve.
South Basin	22-Sep-20		Install new south basin flush point ½" elbow.
Filter 11	22-Sep-20		Replace batteries in filter 11 battery backup.
Gas Engines	22-Sep-20		Run gas engines with Tyler.
Gas Engines and Generator	22-Sep-20		Check oil and coolant levels for monthly load run.
South Basin Effluent	23-Sep-20		Install south basin effluent sample point insulation.
South Basin Influent	23-Sep-20		Finish fabricating new South basin sample point fittings.
South Basin Influent	23-Sep-20		Install new south basin influent sample spout and plumbing.
Joshua Operating	24-Sep-20	24-Sep-20	Joshua operating 1st shift for Glen.
Filter hall and Maintenance Shop	25-Sep-20		Clean and mop filter hall and maintenance shop.
South Basin Bathroom	25-Sep-20		Clean south basin bathroom.
Georgia Ave.	25-Sep-20		Switch pump 3 and 6 on, ensure both operate, collect lab sample.
Wi-Fi	25-Sep-20		Assist Dan in Wi-Fi connection.
East Hypo Reagents	25-Sep-20		Clean and fill East Basin hypo colorimeter.
Potassium Digital Display	25-Sep-20		Install new potassium display with distance feature.
Filter 1 NTU Meter	28-Sep-20		Begin fabricating filter 1 NTU meter plumbing update.
Operations Trash	28-Sep-20		Throw trash and recycling away.
South Basin Influent/Effluent	28-Sep-20		Finish installing South Basin effluent/influent sample line insulation.
Menards	28-Sep-20		Hose clamps, valves, ¼" tubing, pipe insulation, etc.
Honold	28-Sep-20		Purchase boiler pumps for filters, 100' tubing, PVC couplings, etc.
Monday Meeting	28-Sep-20		Topics include shoreline armor, New NTU meter install, filter pump replacement, tower painting, etc.
Filter 1 Fabrication	29-Sep-20		Finish fabricating hose manifold and meter board.
Filter 1 Pump	29-Sep-20		Install and rewire new filter NTU pump.
Filter 1 NTU Meter Hose	29-Sep-20		Run new ½" hose from meter to pump.
Install Filter 1 NTU Meter	29-Sep-20		Install new meter.
Joshua Operating 3rd Shift	29-Sep-20	29-Sep-20	Joshua operating 3rd shift for Glen; 4 hours.
Raw Water Sample Line	30-Sep-20		Clean/flush raw water sample line.
Menards	30-Sep-20		Purchase pipe insulation.
Viking	30-Sep-20		Purchase ½" clamps, ¾" clamps, and polyester channel.
Filter Hall Jars	30-Sep-20		Insulate filter hall jar lines.
Filter 1 NTU Meter	30-Sep-20		Fabricate and install insulation around ¼" lines.
Filter Hall Jars	30-Sep-20		Clean filter hall confirmation jars.

Date: October 15, 2020

To: Joe Trueblood, Utility Superintendent

From: Bill Swearingen, Operations Supervisor

Subject: East Basin Structural Report Summary

Background
The east settling basin was built in 1959 and is located on the east side of the property on the shoreline. In 1992, extensive concrete repairs were made to extend the life of the structure. These repairs included concrete injection, patching multiple areas of failed concrete, and partial interior coating. Recently, utility staff have conducted inspection work, revealing that multiple concrete injection points have failed and found that the interior coating is also failing.

RA Smith was contracted to review onsite and conduct inspection work. RA Smith provided engineering/design evaluation services for the east settling basin structure listed below:

Scope of work provided by RA Smith:

- Inspection and Evaluation
    - Inspection of existing structure: interior/exterior
    - Evaluation of repairs made in 1992
    - Concrete core sample testing
    - Hands-On inspection and LiDAR (3D laser scanning) to document deficiencies
    - Lifecycle cost analysis and reporting

Summary of Inspection Results

The critical repairs include both the described critical cracking and all concrete surface repairs (delamination and spalls). The critical cracks are presumed to be full depth through the basin walls as these cracks exhibit some form of excessive efflorescence or active water seepage or both. Moderate repairs are all remaining cracks with minor to moderate efflorescence and no water seepage noted on the exterior of the basin.

The following table summarizes the defects noted during the interior and exterior inspections. These quantities were used to develop the unit costs and LCCA. The final numbers were adjusted to account for overages anticipated during repair work, or underruns anticipated after basin reconstruction. The items using square foot units of measures were based off the original design drawing dimensions.

	Wall				
	East (FT)	North (FT)	West (FT)	South (FT)	Total (FT)
Moderate Cracking					
Exterior	869	283	152	267	1,571
Critical Cracking					
Exterior	546	139	25	202	912
Interior	546	139	25	202	912
Concrete Surface Repair					
Exterior	81	20	0	50	151
Interior	105	2	0	3	110

Photograph 1: Diagonal cracking typical at corners in underside of slab ceiling slabs.

Photograph 2: 2' wide x 1' high spall in south wall of upper east mixing basin at floor.

Photograph 3: Efflorescence up to 1.5" thick at interior wall, upper east cell, looking north.

Photograph 4: Delamination and spalls along bottom of upper east cell, typical along north half.

Photograph 11: Typical condition of exterior east wall. South end shown.

Photograph 12: Condition of exterior concrete wall beneath skim coat on south wall.

Photograph 31: 1993 Pre-repair photo, north end to scupper 2. .

Photograph 32: 2020 Exterior inspection, north end to half panel past scupper 1.

Photograph 33: 1993 Pre-repair photo, scupper 2, 3 and 4 shown. .

Photograph 34: 2020 Exterior inspection, half panel past scupper 2.

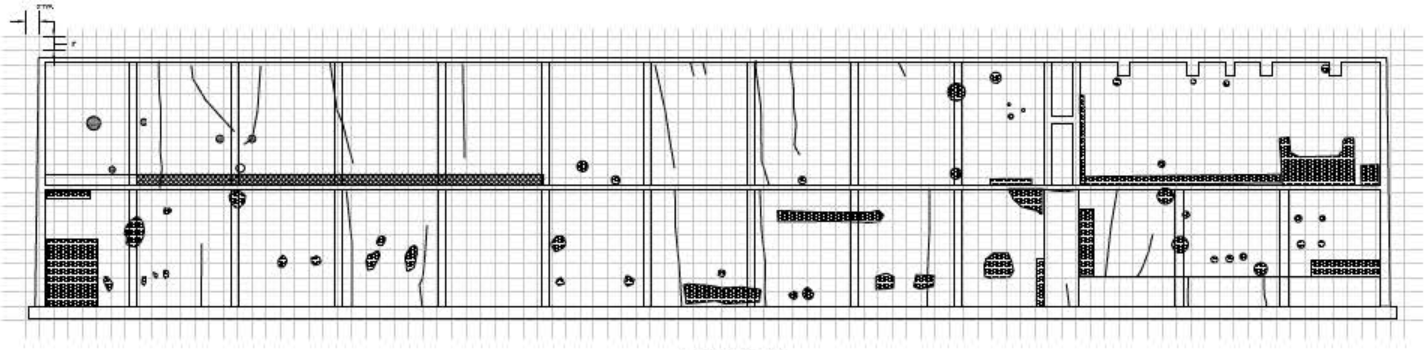
Photograph 37: 2020 Exterior inspection, scupper 4 and 5 shown.

Photograph 38: 2020 Exterior inspection, south end to scupper 5 shown.

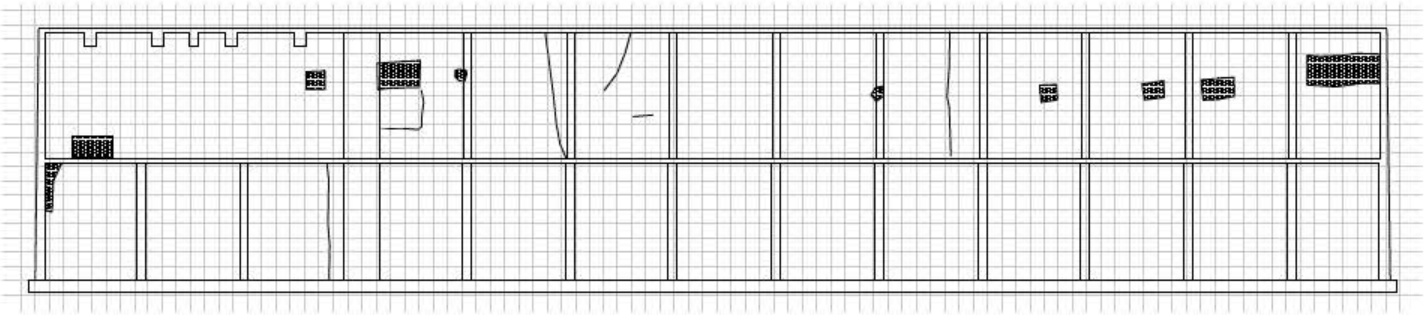
Photograph 39: 1993 Pre-repair photo, south wall shown. .

Photograph 40: 2020 Exterior inspection, south wall shown.

LiDAR (3D laser scanning)



EAST WALL
LOOKING EAST

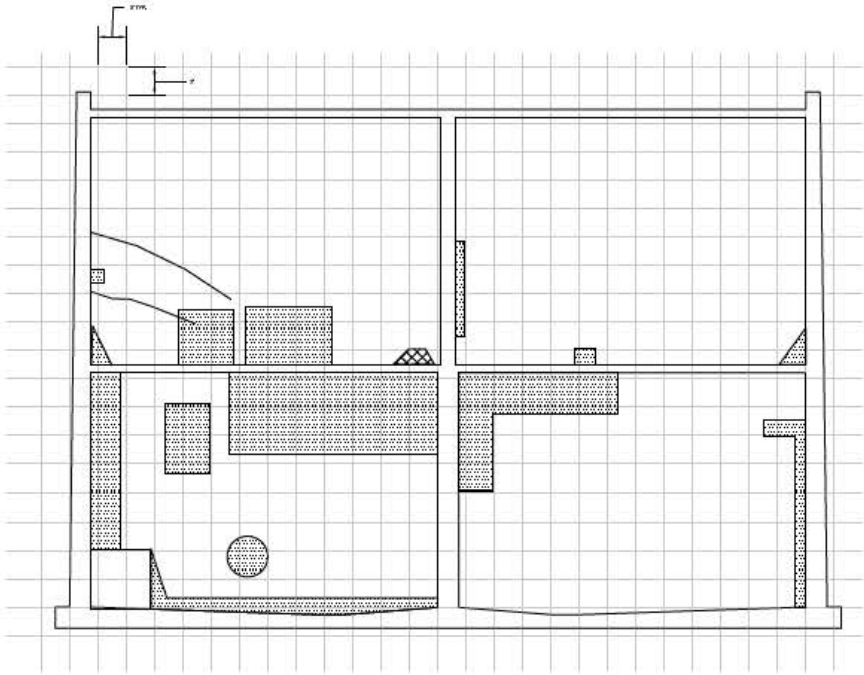


WEST WALL
LOOKING WEST

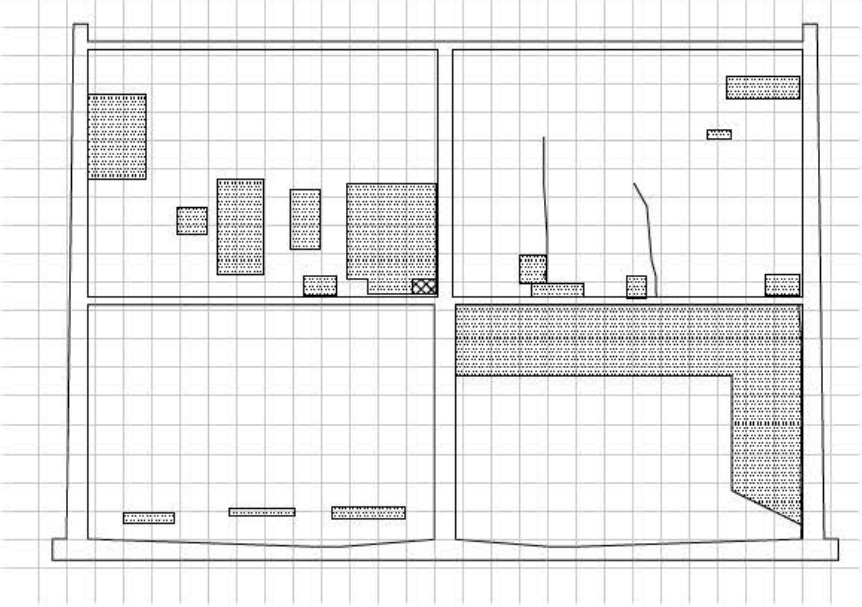
DEFECT QUANTITIES		
	CRACKS	SPALLS
	LF	SF
WEST FACE	74'-11"	-
EAST FACE	232'-10"	105

LEGEND
SPALL
SCALE

811
Know what's below.
Call before you dig.



SOUTH WALL
LOOKING SOUTH



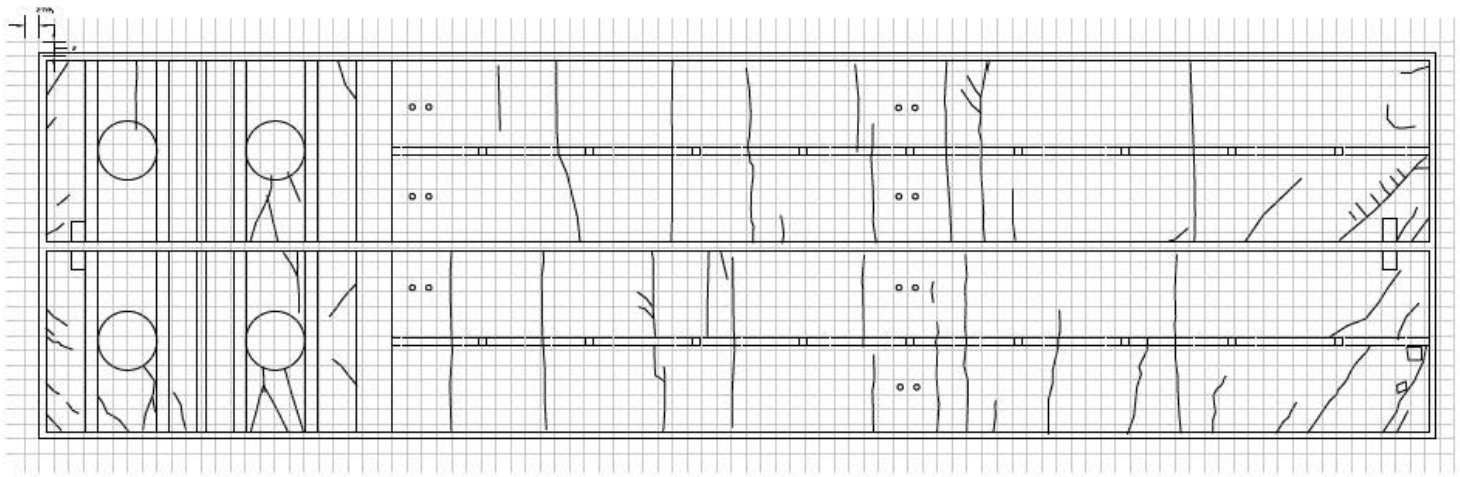
NORTH WALL
LOOKING NORTH

DEFECT QUANTITIES		
	CRACKS	SPALLS
	LF	SF
SOUTH FACE	18'-5"	3
NORTH FACE	15'-4"	2

LEGEND
SPALL
SCALE

GRAPHIC SCALE
0 5 10 20
(IN FEET)

811
Know what's below.
Call before you dig.



CEILING - UPPER CELLS
AS VIEWED FROM FLOOR BELOW

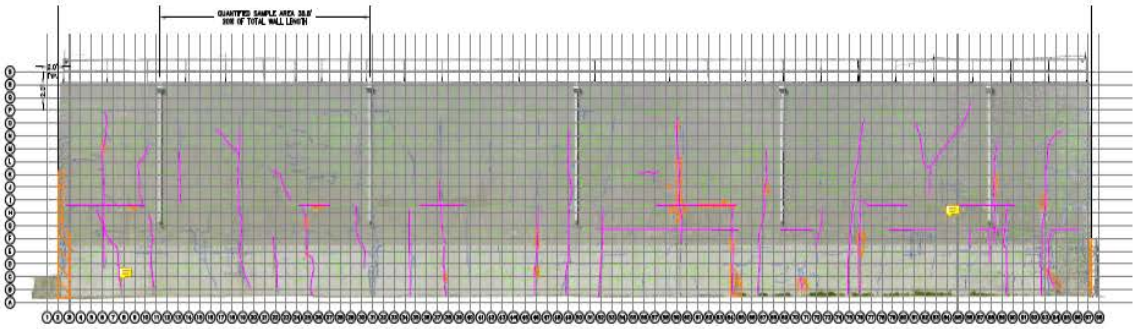
CEILING - LOWER CELLS
AS VIEWED FROM FLOOR BELOW

DEFECT QUANTITIES		
	CRACKS	SPALLS
	LF	SF
UPPER CEILING	706'-10"	-
LOWER CEILING	1226'-8"	3

LEGEND
SPALL
SCALE

GRAPHIC SCALE
0 5 10 20
(IN FEET)

811
Know what's below.
Call before you dig.



1 EAST ELEVATION
SCALE: 1" = 10'

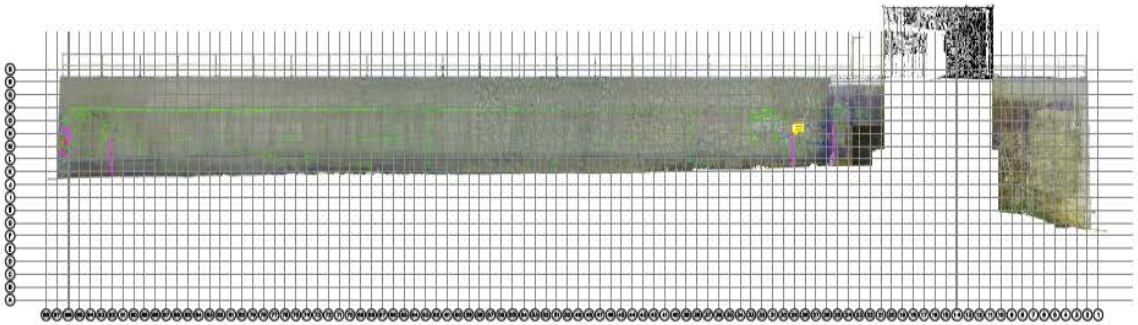
EAST ELEVATION

DIGITIZED QUANTITIES (20% OF TOTAL WALL AREA)

HAIRLINE CRACKS, NO EFFLORESCENCE	957.51 LF
CRACKS WITH EFFLORESCENCE	282.84 LF
DELAMINATION /SPALLS	1.7 SF

EXTRAPOLATED QUANTITIES OF ENTIRE WALL:

HAIRLINE CRACKS, NO EFFLORESCENCE	2787.58 LF
CRACKS WITH EFFLORESCENCE	1414.2 LF
CRITICAL CRACKS	546.12 LF
DELAMINATION /SPALLS	8.5 SF



2 WEST ELEVATION
SCALE: 1" = 10'

WEST ELEVATION

DIGITIZED QUANTITIES (100% OF TOTAL WALL AREA)

HAIRLINE CRACKS, NO EFFLORESCENCE	290.48 LF
CRACKS WITH EFFLORESCENCE	176.71 LF
CRITICAL CRACKS	24.95 LF
DELAMINATION /SPALLS	4.26 SF

NORTH ELEVATION

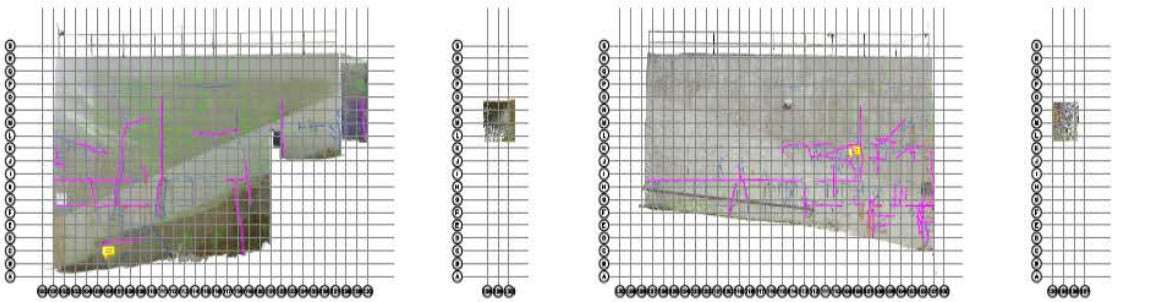
DIGITIZED QUANTITIES (100% OF TOTAL WALL AREA)

HAIRLINE CRACKS, NO EFFLORESCENCE	398.25 LF
CRACKS WITH EFFLORESCENCE	421.15 LF
CRITICAL CRACKS	139.28 LF
DELAMINATION /SPALLS	19.62 SF

PARTIAL NORTH ELEVATION

DIGITIZED QUANTITIES (100% OF TOTAL WALL AREA)

HAIRLINE CRACKS, NO EFFLORESCENCE	0 LF
CRACKS WITH EFFLORESCENCE	0.77 LF
DELAMINATION /SPALLS	0 SF



3 NORTH ELEVATION
SCALE: 1" = 10'

4 PARTIAL NORTH ELEVATION
SCALE: 1" = 10'

5 SOUTH ELEVATION
SCALE: 1" = 10'

6 PARTIAL SOUTH ELEVATION
SCALE: 1" = 10'

SOUTH ELEVATION

DIGITIZED QUANTITIES (100% OF TOTAL WALL AREA)

HAIRLINE CRACKS, NO EFFLORESCENCE	76.26 LF
CRACKS WITH EFFLORESCENCE	468.4 LF
CRITICAL CRACKS	202.26 LF
DELAMINATION /SPALLS	27.37 SF

PARTIAL SOUTH ELEVATION

DIGITIZED QUANTITIES (100% OF TOTAL WALL AREA)

HAIRLINE CRACKS, NO EFFLORESCENCE	5.74 LF
CRACKS WITH EFFLORESCENCE	0.95 LF
DELAMINATION /SPALLS	1.59 SF

NOTE: "CRACKS WITH EFFLORESCENCE" QUANTITIES INCLUDE BOTH MODERATE AND CRITICAL CRACK QUANTITIES.

Review of Alternatives

Alternative 1 – Do Nothing

This alternative is not a viable option because there are a number of critical repairs needed to restore the structural integrity of the east basin. Failure to repair any concrete defect would subject the structure to such structural deficiency that a future decision to rehabilitate it would not be a cost-effective solution. That is it would likely cost more to rehab it than build a new structure entirely.

Scope of Work
Utility would refrain from any repairs and perform only general maintenance as current standard procedure.

Initial Cost
N/A

Expected Life
15 years.

Life Cycle Activities

1. After Basin Reconstruction in Year 15, general maintenance would be performed (as is current standard practice). Defects observed after year 15 would be inspected and repaired with critical defects taking precedent. Future quantities are presumed to be less due to upgrades in concrete design and materials. RASN anticipates a 50% reduction in moderate defects and 75% reduction in critical defects.

Alternative 2 – Perform Critical Repairs Needed for Safety and Structural Integrity

As noted in the report and shown in Exhibit B, there were a number of areas marked as critical during the structural inspection. The critical label was given to any element exhibiting compromised structural integrity (delamination and spalls) marked as orange on the exterior walls or measured on the interior, or cracks exhibiting heavy efflorescence flumes and/or active water seepage highlighted as purple in Exhibit B.2 on the exterior or noted on the interior walls.

This alternate includes removing the interior failed liner and repairing the critical defects. Repairing these deficiencies has been determined as the baseline or minimum amount of work required to extend the service life of the east basin. Removal of the liner does not include removing residue left behind from the liner. Crack sealing will still require removing the existing patching material, locating, and removing the deteriorated concrete surface down to sound concrete immediately adjacent to the crack for proper adherence of the patching/sealant products.

Scope of Work

Complete removal and replacement of the following:

1. Remove interior liner from east basin.
2. Southeast and northeast corners of the basin exterior. (Noted Orange in Exhibit B.2)
3. Spalls along existing cracks along the exterior walls. (Noted Orange in Exhibit B.2)
4. Delamination's along the exterior walls. (Noted Orange in Exhibit B.2)
5. Spalls along the interior east, south and north walls due to scale. (Hatched in Exhibit B.1)
6. Rout out interior cracks, including removal of existing patch material from previous repair.
7. Crack injection of full depth cracks with water seepage and efflorescence flumes (Highlighted Blue in Exhibit B.2)

Expected Life

25 years

Initial Cost

Repair Item Description	Unit	Price/Unit	Quantity Before Adjustment	Quantity	Estimated Cost
Removal of Interior Liner	SF	$ 1.00	15,858	15,858	$ 15,858.00
Removal of Existing Crack Repair Material	LF	$ 31.00	342	376	$ 11,662.30
Critical Crack Injection (Interior)	LF	$ 150.00	912	1,003.2	$ 150,480.00
Critical Crack Injection (Exterior)	LF	$ 125.00	912	1,003.2	$ 150,480.00
Critical Concrete Surface Repairs (Interior)	SF	$ 175.00	110	121	$ 21,175.00
Critical Concrete Surface Repairs (Exterior)	SF	$ 150.00	151	166.1	$ 24,915.00
				Subtotal	$ 374,570.30
				Mobilization/Scaffolding/Harnesses (10%)	$ 37,457.03
				Contingency (25%)	$ 93,642.58
				Total Initial Cost	$ 505,669.91

Alternative 3 – Perform Critical and Moderate Repairs

This alternative addresses all critical and moderate deficiencies on the concrete structure that were highlighted (blue and orange) during the RASN hands-on inspection (interior and exterior). This alternate includes removing the interior failed liner and repairing the critical and moderate defects. Repairing these deficiencies would essentially seal all cracks extending full through or deep enough to permit interior water to pass through and deposit the soluble salts on the exterior (efflorescence).

Scope of Work

1. Remove interior liner from east basin.
2. Southeast and northeast corners of the basin exterior. (Noted Orange in Exhibit B.2)
3. Spalls along existing cracks along the exterior walls. (Noted Orange in Exhibit B.2)
4. Delamination's along the exterior walls. (Noted Orange in Exhibit B.2)
5. Spalls along the interior east, south and north walls due to scale. (Hatched in Exhibit B.1)
6. Rout out interior cracks, including removal of existing patch material from previous repair.
7. Crack injection of full depth cracks with water seepage and efflorescence flumes (Highlighted Blue in Exhibit B.2)
8. Crack injection of all cracks exhibiting efflorescence. (Noted Blue in Exhibit B.2)

Expected Life

30 years

Initial Cost

Repair Item Description	Unit	Price/Unit	Quantity Before Adjustment	Quantity	Estimated Cost
Removal of Interior Liner	SF	$ 1.00	15,858	15,858	$ 15,858.00
Removal of Existing Crack Repair Material	LF	$ 31.00	342	376	$ 11,662.30
Critical Crack Injection (Interior)	LF	$ 150.00	912	1,003.2	$ 150,480.00
Critical Crack Injection (Exterior)	LF	$ 125.00	912	1,003.2	$ 150,480.00
Critical Concrete Surface Repairs (Interior)	SF	$ 175.00	110	121	$ 21,175.00
Critical Concrete Surface Repairs (Exterior)	SF	$ 150.00	151	166.1	$ 24,915.00
Moderate Crack Injection (Exterior)	LF	$ 125.00	1,571	1,728.1	$ 216,012.50
				Subtotal	$ 590,582.80
				Mobilization/Scaffolding/Harnesses (10%)	$ 59,058.28
				Contingency (25%)	$ 147,645.70
				Total Initial Cost	$ 797,286.78

Alternative 4 – Repair All Deficiencies and Re-Line Interior

This alternative addresses all critical and moderate deficiencies on the concrete structure that were highlighted (blue and orange) during the RASN hands-on inspection (interior and exterior) including the removal of compromised interior concrete surface and re-lining of the interior faces of the exterior walls. This alternative was included as it reasonable to assume the existing liner initially played a role in reducing the impact of the water contacting the surface and seeping through the walls. Ultimately, with walls comprised of insufficiently air entrained concrete, the likelihood of wall cracks developing or reopening and a liner debonding will always remain a potential issue.

Scope of Work

1. Remove interior liner from east basin.
2. Water blast the interior surfaces of all exterior walls down to completely sound concrete.
3. Southeast and northeast corners of the basin exterior. (Noted Orange in Exhibit B.2)
4. Spalls along existing cracks along the exterior walls. (Noted Orange in Exhibit B.2)
5. Delamination's along the exterior walls. (Noted Orange in Exhibit B.2)
6. Spalls along the interior east, south and north walls due to scale. (Hatched in Exhibit B.1)
7. Rout out interior cracks, including removal of existing patch material from previous repair.
8. Crack injection of full depth cracks with water seepage and efflorescence flumes (Highlighted Blue in Exhibit B.2)
9. Crack injection of all cracks exhibiting efflorescence. (Noted Blue in Exhibit B.2)
10. Prepare the interior wall surface and apply new liner at a minimum 250 mil thickness.

Expected Life

50 years

Initial Cost

Repair Item Description	Unit	Price/Unit	Quantity Before Adjustment	Quantity	Estimated Cost
Removal of Interior Liner	SF	$ 1.00	15,858	15,858	$ 15,858.00
Water Blasting Removal of Residue / Concrete Wall	SF	$ 2.35	15,858	17,443.8	$ 40,992.93
Install Liner on Interior East, North, West South Wall	SF	$ 50.00	15,858	17,443.8	$ 872,190.00
Removal of Existing Crack Repair Material	LF	$ 31.00	342	376	$ 11,662.30
Critical Crack Injection (Interior)	LF	$ 150.00	912	1,003.2	$ 150,480.00
Critical Crack Injection (Exterior)	LF	$ 125.00	912	1,003.2	$ 150,480.00
Critical Concrete Surface Repairs (Interior)	SF	$ 175.00	110	121	$ 21,175.00
Critical Concrete Surface Repairs (Exterior)	SF	$ 150.00	151	166.1	$ 24,915.00
Moderate Crack Injection (Exterior)	LF	$ 125.00	1,571	1,728.1	$ 216,012.50
				Subtotal	$ 1,503,765.73
				Mobilization/Scaffolding/Harnesses (10%)	$ 150,376.57
				Contingency (25%)	$ 375,941.43
				Total Initial Cost	$ 2,030,083.74

Alternative 5 – Repair All Deficiencies, Re-Line Interior and Line Rooftop

This alternative addresses all critical and moderate deficiencies on the concrete structure that were highlighted (blue and orange) during the RASN hands-on inspection (interior and exterior) including the removal of compromised interior concrete surface and re-lining of the interior faces of the exterior walls. The alternative also addresses removing and replacing the rooftop soil and sealing the rooftop from the exterior to prevent water seepage into basin.

This alternative includes replacing the soil to the rooftop. With insufficiently air entrained concrete, and the rooftop exposed to the elements, the soil acts as insulation to the concrete. This is evidenced by the fact the interior inspection yielded virtually no concrete scale, delamination's or spalls on the underside of the roof slab. Transverse cracking was present with minor efflorescence and on days of rain events, water seepage would occur through a majority of the cracks. Replacing the soil would maintain this benefit.

Scope of Work

1. Remove and stockpile soil from rooftop.
2. Pressure wash, dry and apply elastomer liner 250 mil thickness or similar. Replace soil.
3. Remove interior liner from east basin.
4. Water blast the interior surfaces of all exterior walls down to completely sound concrete.
5. Southeast and northeast corners of the basin exterior. (Noted Orange in Exhibit B.2)
6. Spalls along existing cracks along the exterior walls. (Noted Orange in Exhibit B.2)
7. Delamination's along the exterior walls. (Noted Orange in Exhibit B.2)
8. Spalls along the interior east, south and north walls due to scale. (Hatched in Exhibit B.1)
9. Rout out interior cracks, including removal of existing patch material from previous repair.
10. Crack injection of full depth cracks with water seepage and efflorescence flumes (Highlighted Blue in Exhibit B.2)
11. Crack injection of all cracks exhibiting efflorescence. (Noted Blue in Exhibit B.2)
12. Prepare the interior wall surface and apply new liner at a minimum 250 mil thickness.

Expected Life

50 years

Repair Item Description	Unit	Price/Unit	Quantity Before Adjustment	Quantity	Estimated Cost
Excavation of Rooftop Soil	CY	$ 45.00	351	386	$ 17,359.83
Rooftop Urethane Waterproofing Coating	SF	$ 4.00	9,945	10,939.5	$ 43,758.00
Removal of Interior Liner	SF	$ 1.00	15,858	15,858	$ 15,858.00
Water Blasting Removal of Residue / Concrete Wall	SF	$ 2.35	15,858	17,443.8	$ 40,992.93
Install Liner on Interior East, North, West South Wall	SF	$ 50.00	15,858	17,443.8	$ 872,190.00
Removal of Existing Crack Repair Material	LF	$ 31.00	342	376	$ 11,662.30
Critical Crack Injection (Interior)	LF	$ 150.00	912	1,003.2	$ 150,480.00
Critical Crack Injection (Exterior)	LF	$ 125.00	912	1,003.2	$ 150,480.00
Critical Concrete Surface Repairs (Interior)	SF	$ 175.00	110	121	$ 21,175.00
Critical Concrete Surface Repairs (Exterior)	SF	$ 150.00	151	166.1	$ 24,915.00
Moderate Crack Injection (Exterior)	LF	$ 125.00	1,571	1,728.1	$ 216,012.50
				Subtotal	$ 1,564,883.57
				Mobilization/Scaffolding/Harnesses (10%)	$ 156,488.36
				Contingency (25%)	$ 391,220.89
				Total Initial Cost	$ 2,112,592.81

Alternative 6 – Basin Reconstruction

This alternative addresses the abandonment of the east basin, relocation, and reconstruction of a new basin.

Scope of Work
1. Remove existing reservoir from service and demolish.
2. Design and construct a new reservoir in a different location on site.
3. Site grading/preparation to accommodate new structure footprint.
4. Install new piping network.

Expected Life
75 years

Repair Item Description	Unit	Price/Unit	Quantity Before Adjustment	Quantity	Estimated Cost
Excavation for New Tank	CY	$ 8.00	13410	13410	$ 107,280.00
Concrete Masonry	CY	$ 800.00	2350	2350	$ 1,880,000.00
Reinforcement Bar Uncoated	LBS	$ 0.75	310905	310905	$ 233,178.75
Land Acquisition	LS	$ 200,000.00	1	1	$ 200,000.00
New Piping Network	LF	$ 150.00	500	500	$ 75,000.00
				Subtotal	$ 2,495,458.75
				Mobilization/Scaffolding/Harnesses (10%)	$ 249,545.88
				Contingency (10%)	$ 249,545.88
				Total Initial Cost	$ 2,994,550.50

Review of Alternatives-Cost/Life Expectancy Comparsion

Capital Investment Initial Costs

Activity No.	Description	Initial Cost	Service Life	Cost Reduction Due to Reconstruction Upgrades
1	Removal of Interior Liner	$21,408	.0 yr	
2	Removal of Residue / Scale	$55,340	.0 yr	
3	Re-Line Interior	$1,177,457	50 yr	
4	Critical Concrete Surface Repa	$62,222	25 yr	75%
5	Critical Crack Repairs	$422,040	30 yr	75%
6	Moderate Crack Repairs	$291,617	35 yr	50%
7	Line Rooftop	$82,509	50 yr	
8	Basin Reconstruction	$2,994,551	75 yr	

Design Alternatives, Timing, & Initial Costs

	Alternative 1 - Do Nothing		Alternative 2 - Repair Critical Deficiencies		Alternative 3 - Repair Critical and Moderate Deficiencies		Alternative 4 - Repair All Deficiencies and Re-Line Interior		Alternative 5 - Repair All Deficiencies, Line Roof and Re-Line Interior		Alternative 6 - Basin Reconstruction	
Year	Activity	Initial Cost	Activity	Initial Cost	Activity	Initial Cost			Activity	Initial Cost	Activity	Initial Cost
0			1,4,5	$505,670	1,4,5,6	$797,287	1,2,3,4,5,6	$2,030,084	1,2,3,4,5,6,7	$2,112,593	Basin Reconstruction	$2,994,551
15	Basin Reconstruction	$2,994,551										
20												
25			Basin Reconstruction	$2,994,551								
30					Basin Reconstruction	$2,994,551	Moderate Repairs (6)	$145,808	Moderate Repairs (6)	$145,808		
35											Critical Repairs (4,5)	$121,065.40
40											Moderate Repairs (6)	$145,808.44
45												
50	Critical Repairs (4,5)	$121,065.40					Basin Reconstruction	$2,994,551	Basin Reconstruction	$2,994,551		
55	Moderate Repairs (6)	$145,808.44										
60			Critical Repairs (4,5)	$121,065.40								
65			Moderate Repairs (6)	$145,808.44	Critical Repairs (4,5)	$121,065.40						
70					Moderate Repairs (6)	$145,808.44						
75	Residual Service Life	-$598,910	Residual Service Life	-$998,184	Residual Service Life	-$1,197,820	Residual Service Life	-$1,996,367	Residual Service Life	-$1,996,367	Residual Service Life	$0

RA Smith Recommendation: Based on Repairs, Extended Service Life, and Cost

Alternative 2 – Perform Critical Repairs Needed for Safety and Structural Integrity

Cost: $505,670

Alternative 2 – Repair of Critical Defects, focuses on repairing those critical areas noted within the report and exhibits and summarized in the following:

The critical areas requiring immediate addressing are those cracks with efflorescence flumes, or cracks with active water seepage through the wall. These areas include the cracks found in the effluent channel. The larger cracks that have opened or re-opened pose a higher threat to widening and essentially "springing a leak" or eventually exposing and corroding wall reinforcement. Cracks will be thoroughly routed and sealed from the interior. The interior spalls and deep scale along the south, north and east walls would be chipped down to sound concrete or reinforcement, whichever is deeper, and patched. These areas of spalls running along the exterior cracks are consistent enough to be considered an impact to structural capacity.

Both the southeast and northeast corners of the exterior wall where the concrete has exhibited high density cracking, efflorescence and delamination would be chipped down to sound concrete or reinforcement, whichever is deeper, and patched. Liner removal would be required if the Utility desires relining the interior and surface preparation would be required